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FLOOD DAMAGE TO OHIO AND INDIANA DRUGGISTS.

DURING the month of March much of the territory of central and southern Ohio, and an extensive section of Indiana, were swept by the most disastrous floods in the history of these sections.

The inhabitants of these regions had so long escaped disasters of this kind that they had come to regard their sections as safe against the destructive storms and floods which from time to time had visited other states, but the record of March proves this sense of security to have been ill founded.

The section of Ohio mainly affected is a moderately elevated plateau, and seemed to be especially well situated to escape extensive damage from floods. The streams are numerous, and are ordinarily well behaved, carrying off the waters of the annual spring freshets with no greater expansion than could be accommodated by the ample "bottoms" which form their ordinary flood grounds. These, however, proved entirely inadequate to carry the flood of water suddenly poured into them. Following an unprecedented rainfall, valleys two to four miles wide, which apparently had not been filled with water since the melting of the ancient glaciers, became within a few hours rivers of rushing waters, lifting houses and barns from their foundations and hurling them against bridges of steel and concrete, which crumpled up like rotten wood under the impact, while railway embankments that had stood for half a century dissolved and disappeared like snow drifts.

Towns and districts located high above the level of recorded floods were inundated. The lighter and less substantial buildings were twisted from their

foundations and hurled against the more substantial buildings of brick and cement, until these, too, gave way, leaving on recession of the flood a tangled mass of wreckage, consisting of broken timbers, pianos, automobiles, railroad freight cars, household goods, stocks of vegetable stalls and dry goods stores, and the bodies of human victims, horses and cattle, thickly covered with mud. In some places whole rows of well built cottage homes were completely swept away, leaving their sites a series of irregular depressions like an emptied river bed. In some places the soil of fertile fields was carried away, down to the untillable clay beneath, while in other places it was left covered by a thick layer of coarse gravel and river boulders.

During approximately thirty-six hours the rainfall amounted to one-third, or more, of the annual average precipitation. The cleared hills and their slopes permitted the water to run off almost as fast as it fell, and the well drained fields of the lower grounds carried the water directly to the small streams into which they emptied. The sewer systems of the villages and towns likewise hurried the waters which they collected into the creeks and rivers, the consequence being that the bulk of the rainfall reached the streams within a few hours after its precipitation, whereas a hundred years ago it would have been largely absorbed by the soil upon which it fell, and would have escaped by slow seepage, distributed over weeks and months.

The alleged narrowing of the river channels by the dumping of waste into them, which has been given as one of the causes of the damage, in reality played but a minor part. A more important factor, perhaps, was the frequent narrowing of the river channels by the approaches and abutments of railroad and other bridges. The part played by both of these, however, was insignificant. Even if the channels had been of their original width at all points they could not have carried off the enormous volume of water that was poured into them in the short space of time, and it is not easy to imagine any system of impounding basins or of levees that would have been sufficient to have restrained the floods from destructive results.

It has been estimated by competent hydrographic authorities that a basin of not less than eighteen hundred square miles in area and twenty-five feet deep would have been required to contain the total precipitation, a work that would seem to be almost beyond the range of possibility.

That the loss of life was at first overestimated was due mainly to the breaking of all lines of communication between inhabited centers. When it was perceived that villages and resident districts were largely under water, or the buildings swept away, and their inhabitants could not be heard from it was assumed that they had perished. The loss of life, however, was far too great, even though much less than at first reported. The property loss will never be correctly estimated. In portions of some communities the accumulations of half a century have been entirely swept away.

A prominent jobber in central Ohio estimates the number of retail druggists who were more or less injured by the floods at two hundred, of which about one hundred and twenty-five had their stocks and stores, and sometimes their homes, either very greatly damaged, or practically destroyed. As soon as communications were reopened and the extent of the damage became known, offers of as-

sistance to the damaged druggists were abundant. Manufacturing houses very largely sent notice of their intention to replace the damaged or destroyed stocks with new material; jobbers gave notice of their intention to extend the period of credit, and to aid in other ways, while various Pharmaceutical Associations began the collection of funds to be loaned to druggists in the injured districts to enable them to resume business. It is stated that the druggists of San Francisco and vicinity, remembering the manner in which the druggists of the East came to their aid following the great San Francisco fire, have contributed something like fifty thousand dollars to be loaned to the flood-damaged druggists.

Most of the railways affected have been able to resume traffic over temporary bridges and trestle-work, though with some the damage was so extensive that considerable stretches of their lines are still out of commission. The business houses in most cases have already reopened with new stock of goods, or are preparing to do so at an early date. Everywhere in the damaged districts the people are bearing their misfortunes bravely, and are starting in to restore their ruined homes and fortunes. In this work all will wish them success, and many will be glad to assist.

J. H. BEAL.

Section on Scientific Papers

Papers Presented at the Sixtieth Annual Convention

VARIATION IN THE SUSCEPTIBILITY OF THE GUINEA PIG TO THE HEART TONIC GROUP.

(Second Paper.)

CHAS. E. VANDERKLEED, PHAR. D., COLLINGSWOOD, N. J., AND PAUL S. PITTENGER, PHAR. D., PHILADELPHIA, PA.

In a paper read at the 1911 meeting of the American Pharmaceutical Association in Boston, one of us outlined a plan for a series of experiments to cover a period of one year, during which time the susceptibility to Ouabain poisoning of guinea pigs, male and female, large and small, might be observed. During the year which has elapsed since that meeting, this set of experiments has been carried out, following the plan outlined in the former paper just as closely as it was possible to do so.

As stated in the first paper, the experimental pigs were divided into four classes, males large and small, and females large and small. All were fed alike on oats, hay and seasonable greens, as previous experience had demonstrated that pigs cannot thrive on greens alone. All were housed alike, being brought in from their country quarters in groups of fifty to one hundred, and kept in specially provided quarters in the laboratory for one to two weeks before using for the tests.

The test substance used was Merck's Crystallized Strophanthin, Thoms (Ouabain), a fresh solution from the same sample being prepared for each series of injections, in order to obviate as far as possible any deterioration of the material.

The following tables show in detail the results of the tests month by month. The doses are in all cases those given per 250 gram weight:

JULY, 1911.

Temperature of Laboratory 25 to 29° C. Aver. 27°C.

Small Males, 140 to 210 gms.			Large Males, 270 to 410 gms.		
Dose		Results	Dose		Results
0.0000400	—	Recovered	0.0000375	—	Recovered
0.0000440	—	Recovered	0.0000400	—	Recovered
0.0000470	—	Recovered	0.0000440	—	Recovered
0.0000500	—	Recovered	0.0000470	—	Recovered
0.0000500	—	Recovered	0.0000470	+	Died*
x0.0000525	+	Died	0.0000500	—	Recovered
0.0000550	+	Died	0.0000500	—	Recovered
0.0000575	+	Died	x0.0000525	+	Died
0.0000600	+	Died	0.0000550	+	Died
0.0000690	+	Died	0.0000600	+	Died
0.0000720	+	Died			
M. L. D.=0.0000525.			M. L. D.=0.0000525.		

*Died "out of order."

Small Females, 160 to 210 gms.

Dose		Results
0.0000400	—	Recovered
0.0000440	—	Recovered
0.0000440	—	Recovered
0.0000470	—	Recovered
0.0000470	—	Recovered
0.0000500	—	Recovered
0.0000500	+	Died
x0.0000525	+	Died
0.0000550	+	Died
0.0000575	+	Died
0.0000600	+	Died

M. L. D.=0.0000525.

Large Females, 260 to 350 gms.

Dose		Results
0.0000375	—	Recovered
0.0000400	—	Recovered
0.0000400	—	Recovered
0.0000440	—	Recovered
0.0000440	—	Recovered
0.0000470	—	Recovered
0.0000470	—	Recovered
x0.0000500	+	Died
0.0000500	+	Died
0.0000525	+	Died
0.0000600	+	Died

M. L. D.=0.0000500.

AUGUST, 1911.

Temperature of Laboratory 25 to 29° C. Aver. 27° C.

Small Males, 140 to 210 gms.

Dose		Results
0.000040	—	Recovered
0.000044	—	Recovered
0.000047	—	Recovered
0.000050	—	Recovered
x0.0000525	+	Died
0.000055	+	Died
0.0000575	+	Died

M. L. D.=0.0000525.

Large Males, 270 to 410 gms.

Dose		Results
0.000040	—	Recovered
0.000044	—	Recovered
0.000047	—	Recovered
0.000050	—	Recovered
x0.0000525	+	Died
0.000055	+	Died

M. L. D.=0.0000525.

Small Females, 160 to 210 gms.

Dose		Results
0.000040	—	Recovered
0.000044	—	Recovered
0.000047	—	Recovered
0.000050	—	Recovered
x0.0000525	+	Died
0.0000550	+	Died
0.0000575	+	Died

M. L. D.=0.0000525.

Large Females, 260 to 345 gms.

Dose		Results
0.000040	—	Recovered
0.000044	—	Recovered
0.000047	—	Recovered
x0.000050	+	Died
0.000050	+	Died
0.0000525	+	Died

M. L. D.=0.000050.

SEPTEMBER, 1911.

Temperature of Laboratory 20 to 27° C. Aver. 23.5° C.

Small Males, 105-215 gms.

Dose		Results
0.000045	—	Recovered
0.000047	—	Recovered
0.000050	—	Recovered
0.000050	—	Recovered
0.000050	+	Died
x0.0000525	+	Died
0.0000525	+	Died
0.000054	+	Died
0.000058	+	Died
0.000062	+	Died

M. L. D.=0.0000525.

Large Males, 240 to 320 gms.

Dose		Results
0.000045	—	Recovered
0.000047	—	Recovered
0.000050	—	Recovered
0.000050	—	Recovered
x0.0000525	+	Died
0.0000525	+	Died
0.000054	+	Died
0.000058	+	Died
0.000062	+	Died

M. L. D.=0.0000525.

Small Females, 105 to 245 gms.

Dose		Results
0.000044	—	Recovered
0.000047	—	Recovered
0.000050	—	Recovered
0.000050	—	Recovered
0.000050	+	Died
x0.0000525	+	Died
0.0000525	+	Died
0.000054	+	Died
0.000058	+	Died

M. L. D.=0.0000525.

Large Females, 230 to 295 gms.

Dose		Results
0.000037	—	Recovered
0.000040	—	Recovered
0.000044	—	Recovered
0.000044	—	Recovered
0.000044	—	Recovered
x0.000047	+	Died
0.000047	+	Died
0.000047	+	Died
0.000050	+	Died
0.0000525	+	Died

M. L. D.=0.000047.

OCTOBER, 1911.

Temperature of Laboratory 18 to 24.5° C. Aver. 21.25° C.

Small Males, 190 to 335 gms.

Dose		Results
0.000047	—	Recovered
0.000050	—	Recovered
0.0000525	—	Recovered
0.000057	—	Recovered
0.000057	—	Recovered
0.000060	—	Very sick—recovered
x0.000060	+	Died
0.000060	+	Died
0.0000625	+	Died

M. L. D.=0.000060.

Large Males, 465 to 745 gms.

Dose		Results
0.000047	—	Recovered
0.000047	—	Recovered
0.000050	—	Very sick—recovered
0.000050	—	Very sick—recovered
0.000050	+	Died*
0.0000525	—	Very sick—recovered
x0.0000525	+	Died
0.0000525	+	Died
0.000055	+	Died
0.0000575	+	Died
0.000060	+	Died

M. L. D.=0.0000525.

*Died "out of order."

Small Females, 225 to 310 gms.

Dose		Results
0.000045	—	Recovered
0.000047	—	Recovered
0.000047	—	Recovered
0.000047	+	Died*
0.000050	—	Recovered
0.0000525	—	Very sick—recovered
0.0000525	—	Very sick—recovered
0.0000525	+	Died
x0.000055	+	Died
0.000057	+	Died
0.000057	+	Died
0.000060	+	Died
0.000060	+	Died

M. L. D.=0.000055.

Large Females, 370 to 705 gms.

Dose		Results
0.0000325	—	Recovered
0.0000375	—	Recovered
0.000040	—	Recovered
0.000040	—	Recovered
0.000040	—	Very sick—recovered
0.000044	—	Very sick—recovered
0.000044	—	Very sick—recovered
0.000047	—	Very sick—recovered
0.000050	—	Very sick—recovered
x0.000050	+	Died
0.000050	+	Died
0.000052	+	Died
0.000055	+	Died
0.000057	+	Died

M. L. D.=0.000050.

NOVEMBER, 1911.

Temperature of laboratory, 20 to 24 ° C. Aver., 22° C.

Small Males, 175 to 320 gms.

Dose		Results
0.000045	—	Recovered
0.000047	—	Recovered
0.000050	+	Died*
0.000055	—	Recovered
0.000055	—	Recovered
x0.000057	+	Died
0.000057	+	Died
0.000060	+	Died
0.000065	—	Recovered*
0.000070	+	Died
0.0000725	+	Died
0.0000725	+	Died

M. L. D.=0.000057.

Large Males, 410 to 670 gms.

Dose		Results
0.000050	—	Recovered
0.000055	—	Recovered
0.000057	—	Recovered
0.000057	—	Recovered
x0.000060	+	Died
0.000060	+	Died
0.0000625	+	Died
0.000065	+	Died

M. L. D.=0.000060.

Small Females, 165 to 395 gms.

Dose		Results
0.000050	—	Recovered
0.0000525	—	Recovered
0.000055	—	Recovered
0.000055	—	Recovered
x0.000057	+	Died
0.000057	+	Died
0.000060	+	Died
0.0000625	+	Died
0.000065	+	Died
0.000067	+	Died

M. L. D.=0.00005

Large Females, 380 to 610 gms.

Dose		Results
0.000050	—	Recovered
0.0000525	—	Recovered
0.0000525	—	Recovered
0.0000525	+	Died*
0.000055	—	Recovered
0.000055	—	Recovered
x0.000057	+	Died
0.000057	+	Died
0.000057	+	Died
0.000060	+	Died
0.000065	+	Died

M. L. D.=0.000057.

DECEMBER, 1911.

Temperature of laboratory, 14 to 23° C. Aver., 18.5° C.

Small Males, 160 to 290 gms.

Dose		Results
0.000055	—	Recovered
0.0000575	—	Recovered
0.000060	—	Recovered
0.000065	—	Recovered
0.0000675	—	Recovered
0.000070	—	Recovered
x0.000070	+	Died
0.000070	+	Died
0.0000725	+	Died
0.000075	+	Died
0.000080	+	Died
0.000087	+	Died
0.000090	+	Died
0.000094	+	Died

M. L. D.=0.000070.

Large Males, 350 to 495 gms.

Dose		Results
0.000040	—	Recovered
0.000043	—	Recovered
0.000045	—	Recovered
0.000047	—	Recovered
0.000055	—	Recovered
0.000060	—	Recovered
0.0000625	—	Recovered
0.000065	—	Recovered
0.0000675	—	Recovered
0.000070	—	Recovered
x0.000070	+	Died
0.000070	+	Died
0.000070	+	Died
0.000075	+	Died
0.000080	+	Died
0.000084	+	Died
0.000087	+	Died
0.000090	+	Died

M. L. D.=0.000070.

* Died or recovered "out of order."

Small Females, 175 to 290 gms.

Dose		Results
0.000055	—	Recovered
0.000060	+	Died*
0.000065	—	Recovered
0.000065	—	Recovered
0.0000675	—	Recovered
0.0000675	—	Recovered
0.0000675	+	Died
x0.000070	+	Died
0.000070	+	Died
0.0000725	+	Died
0.000075	+	Died
0.000080	+	Died
0.000080	+	Died
0.000087	+	Died

M. L. D.=0.000070.

Large Females, 275 to 395 gms.

Dose		Results
0.000060	—	Recovered
0.000065	—	Recovered
0.000065	+	Died*
0.0000675	—	Recovered
x0.000070	+	Died
0.000070	+	Died
0.000075	+	Died
0.000080	+	Died
0.000084	+	Died

M. L. D.=0.000070.

JANUARY, 1912.

Temperature of laboratory, 15 to 25° C. Aver., 20° C.
Temperature of guinea-pig quarters, 7 to 17° C. Aver., 12° C.

Small Males, 170 to 345 gms.

Dose		Results
0.000055	—	Recovered
0.000057	—	Recovered
0.000060	—	Recovered
0.000060	—	Recovered
0.000060	—	Recovered
0.000060	+	Died*
0.0000625	—	Recovered
x0.0000625	+	Died
0.0000625	+	Died
0.000065	+	Died
0.000065	+	Died
0.0000675	+	Died

M. L. D.=0.0000625.

Large Males, 330 to 790 gms.

Dose		Results
0.000055	—	Recovered
0.000060	—	Recovered
0.000060	—	Recovered
0.0000625	—	Recovered
x0.0000625	+	Died
0.0000625	+	Died
0.000065	+	Died
0.000065	+	Died
0.000065	—	Recovered*
0.0000675	+	Died
0.000070	+	Died

M. L. D.=0.0000625.

Small Females, 205 to 295 gms.

Dose		Results
0.0000625	—	Recovered
0.000065	—	Recovered
0.000065	—	Recovered
0.0000675	—	Recovered
0.0000675	—	Recovered
0.0000675	+	Died*

M. L. D.=0.0000725.

Dose		Results
0.000070	—	Recovered
0.000070	—	Recovered
0.000070	+	Died
x0.0000725	+	Died
0.0000725	+	Died
0.0000725	+	Died

FEBRUARY, 1912.

Temperature of laboratory, 15 to 22° C. Aver., 18.5° C.
Temperature of guinea-pig quarters, 8 to 16° C. Aver., 12° C.

Small Males, 210 to 360 gms.

Dose		Results
0.000045	—	Recovered
0.000060	—	Recovered
0.000060	—	Recovered
0.000060	—	Recovered
x0.000065	+	Died
0.000065	+	Died
0.000070	+	Died
0.000070	—	Recovered*
0.000075	+	Died
0.000080	+	Died

M. L. D.=0.000065.

Large Males, 330 to 615 gms.

Dose		Results
0.000065	—	Recovered
0.000070	—	Recovered
0.000070	—	Recovered
0.000070	+	Died*
0.000072	—	Recovered
0.000075	—	Recovered
0.000075	—	Recovered
x0.000075	+	Died
0.000080	+	Died
0.000080	+	Died
0.000085	+	Died
0.000090	+	Died
0.000092	+	Died
0.000095	+	Died

M. L. D.=0.000075.

* Died or recovered "out of order."

Small Females, 175 to 320 gms.

Dose		Results
0.000060	—	Recovered
0.000065	—	Recovered
0.000065	—	Recovered
0.000070	—	Recovered
0.000070	—	Recovered
0.000070	+	Died*
0.000075	—	Recovered
0.000075	—	Recovered
0.000075	+	Died*
0.000080	—	Recovered
0.000080	—	Recovered
0.0000825	—	Recovered
0.0000825	—	Recovered
0.0000825	+	Died*
0.000085	—	Recovered
0.000085	—	Recovered
x0.000085	+	Died
0.000085	+	Died
0.000085	+	Died
0.0000875	+	Died
0.0000875	+	Died
0.0000875	—	Recovered*
0.000090	+	Died
0.000090	+	Died
0.000090	—	Recovered*
0.000095	+	Died
0.000095	+	Died
0.000100	+	Died

M. L. D.=0.000085.

Large Females, 280 to 410 gms.

Dose		Results
0.000060	—	Recovered
0.000065	—	Recovered
0.000065	—	Recovered
0.000065	+	Died
x0.000070	+	Died
0.000070	+	Died
0.000075	+	Died
0.000080	—	Recovered*
0.0000825	+	Died
0.000085	+	Died
0.000090	+	Died
0.000095	+	Died

M. L. D.=0.000070.

MARCH, 1912.

Temperature of laboratory, 18 to 22° C. Aver., 20° C.
Temperature of guinea-pig quarters, 10 to 15° C. Aver., 12.5° C.

Small Males, 200 to 390 gms.

Dose		Results
0.000040	—	Recovered
0.000050	—	Recovered
0.000060	—	Recovered
0.000080	—	Recovered
0.0000825	—	Recovered
0.0000825	—	Recovered
0.000085	—	Recovered
0.000085	—	Recovered
0.000085	—	Recovered
0.0000875	—	Recovered
0.0000875	—	Recovered
0.0000875	+	Died
x0.000090	+	Died
0.000090	+	Died
0.000090	—	Recovered*
0.000095	+	Died

M. L. D.=0.000090.

Large Males, 310 to 810 gms.

Dose		Results
0.000060	—	Recovered
0.000065	—	Recovered
0.0000675	—	Recovered
0.000070	—	Recovered
0.0000725	—	Recovered
0.0000725	+	Died*
0.0000725	+	Died*
0.0000725	—	Recovered
0.000075	—	Recovered
0.000075	—	Recovered
0.000075	—	Recovered
0.000075	+	Died*
0.0000775	—	Recovered
0.0000775	—	Recovered
0.0000775	+	Died
x0.000080	+	Died
0.000080	+	Died
0.0000825	+	Died
0.000085	+	Died
0.0000875	+	Died

M. L. D.=0.000080.

Small Females, 215 to 355 gms.

Dose		Results
0.000060	—	Recovered
0.000070	—	Recovered
0.000080	—	Recovered
0.0000825	—	Recovered
0.0000825	—	Recovered
0.0000825	—	Recovered
x0.000085	+	Died
0.000085	+	Died
0.000085	+	Died
0.0000875	+	Died
0.0000875	—	Recovered*
0.000090	+	Died

M. L. D.=0.000085.

Large Females, 265 to 485 gms.

Dose		Results
0.000055	—	Recovered
0.000060	—	Recovered
0.000065	+	Died*
0.0000675	+	Died*
0.0000675	—	Recovered
0.000070	—	Recovered
0.000070	+	Died*
0.0000725	—	Recovered
x0.000075	+	Died
0.000075	+	Died
0.000080	+	Died
0.0000825	+	Died
0.000085	+	Died
0.0000875	+	Died

M. L. D.=0.000075.

*Died or recovered "out of order."

APRIL, 1912.

Temperature of laboratory, 20 to 28° C. Aver., 24° C.
Temperature of guinea-pig quarters, 14 to 20° C. Aver., 17° C.

Small Males, 185 to 250 gms.

Dose	Results
0.000070	— Recovered
0.000075	— Recovered
0.0000775	— Recovered
x0.000080	+ Died
0.000080	+ Died
0.0000825	+ Died
0.000085	+ Died

M. L. D.=0.000080.

Large Males, 240 to 545 gms.

Dose	Results
0.000065	— Recovered
0.000070	— Recovered
0.0000725	— Recovered
0.0000725	— Recovered
0.000075	— Recovered
0.000075	+ Died*
0.0000775	— Recovered
0.0000775	— Recovered
0.0000775	— Recovered
0.000080	— Recovered
0.000080	— Recovered
0.000080	+ Died*
0.0000825	— Recovered
x0.0000825	+ Died
0.0000825	+ Died
0.000085	+ Died
0.000085	+ Died

M. L. D.=0.0000825.

Small Females, 180 to 310 gms.

Dose	Results
0.000070	— Recovered
0.0000725	— Recovered
0.0000725	+ Died*
0.000075	— Recovered
0.000075	— Recovered
x0.0000775	+ Died

M. L. D.=0.0000775.

Dose	Results
0.0000775	+ Died
0.000080	+ Died
0.000080	+ Died
0.0000825	+ Died
0.000090	+ Died

MAY-JUNE, 1912.

Temperature of laboratory, 23 to 28.5° C. Aver., 25.75° C.
Temperature of guinea-pig quarters, 22 to 29° C. Aver., 25.5° C.

Small Males, 195 to 305 gms.

Dose	Results
0.000065	+ Died*
0.000070	— Recovered
0.000075	— Recovered
0.000080	— Recovered
0.000085	— Recovered
0.000090	— Recovered
0.000095	— Recovered
x0.000095	+ Died
0.000095	+ Died
0.000100	+ Died
0.000100	+ Died
0.000100	+ Died

M. L. D.=0.000095.

Large Males, 265 to 375 gms.

Dose	Results
0.000065	— Recovered
0.000065	— Recovered
0.000067	— Recovered
0.000070	— Recovered
0.000070	— Died*
0.0000725	— Recovered
0.000075	— Recovered
0.000075	+ Died*
0.000080	— Recovered
x0.0000825	+ Died
0.0000825	+ Died
0.000085	+ Died
0.000090	Died

M. L. D.=0.0000825.

Small Females, 210 to 350 gms.

Dose	Results
0.000060	— Recovered
0.000060	— Recovered
0.0000625	— Recovered
0.0000625	— Recovered
0.000065	— Recovered
0.000065	— Recovered
0.000070	— Recovered
0.000070	— Recovered
0.000070	— Died*
0.0000725	— Recovered
0.000075	— Recovered
x0.000075	+ Died
0.000075	+ Died
0.000080	+ Died

M. L. D.=0.000075.

Large Females, 265 to 375 gms.

Dose	Results
0.000065	— Recovered
0.000067	— Recovered
0.000070	— Recovered
0.0000725	— Recovered
0.000075	— Recovered
0.000080	— Recovered
0.000085	— Recovered
x0.000085	+ Died
0.000085	+ Died
0.0000875	+ Died
0.000090	+ Died

M. L. D.=0.000085.

* Died "out of order."

JULY, 1912.

Temperature of laboratory, 26 to 30° C. Aver., 28° C.
Temperature of guinea-pig quarters, 22 to 29° C. Aver., 25.5° C.

Small Males, 175 to 375 gms.

Dose		Results
0.000040	—	Recovered
0.000050	—	Recovered
0.000060	—	Recovered
x0.000065	+	Died
0.000065	+	Died
0.000070	+	Died
0.000070	+	Died
0.000075	—	Recovered*
0.000080	+	Died
0.000085	+	Died
0.000090	+	Died
0.0000925	+	Died
0.000095	+	Died
0.000100	+	Died

M. L. D.=0.000065.

Large Males, 335 to 535 gms.

Dose		Results
0.000050	—	Recovered
0.000050	—	Recovered
0.000060	—	Recovered
0.000065	—	Recovered
0.000065	—	Recovered
x0.000070	+	Died
0.000070	+	Died
0.000080	+	Died
0.000085	+	Died
0.000090	+	Died
0.0000925	+	Died
0.000095	+	Died
0.000100	+	Died

M. L. D.=0.000070.

Small Females, 175 to 360 gms.

Dose		Results
0.000040	—	Recovered
0.000050	—	Recovered
0.000060	—	Recovered
0.0000625	—	Recovered
0.0000650	+	Died*
0.000070	—	Recovered
x0.000075	+	Died
0.000075	+	Died
0.000075	+	Died
0.000080	—	Recovered*
0.000080	—	Recovered*
0.000085	+	Died
0.000090	+	Died
0.000090	—	Recovered*
0.0000925	—	Recovered*
0.0000925	+	Died
0.000095	+	Died
0.000095	+	Died
0.000100	+	Died

M. L. D.=0.000075.

Large Females, 275 to 435 gms.

Dose		Results
0.000040	—	Recovered
0.000045	—	Recovered
0.000050	—	Recovered
0.000060	—	Recovered
0.000060	—	Recovered
0.000065	—	Recovered
0.000065	—	Recovered
0.000065	+	Died
x0.000070	+	Died
0.000070	+	Died
0.000075	+	Died
0.000080	+	Died
0.000090	+	Died
0.000090	—	Recovered*
0.0000925	+	Died
0.000095	+	Died

M. L. D.=0.000070.

* Died or recovered "out of order."

In order to draw conclusions from the above tables it is desirable to condense the results into a single table as follows:

MINIMUM LETHAL DOSES BY MONTHS.

	Small Males	Large Males	Small Females	Large Females	Average
July, 1911. Lab. 27° C.	0.0000525	0.0000525	0.0000525	0.0000500	0.0000519
Aug., 1911. Lab. 27° C.	0.0000525	0.0000525	0.0000525	0.0000500	0.0000519
Sept., 1911. Lab. 23.5° C.	0.0000525	0.0000525	0.0000525	0.0000470	0.0000511
Oct., 1911. Lab. 21.25° C.	0.0000600	0.0000525	0.0000550	0.0000500	0.0000544
Nov., 1911. Lab. 22° C.	0.0000570	0.0000600	0.0000570	0.0000570	0.0000577
Dec., 1911. Lab. 18.5° C.	0.0000700	0.0000700	0.0000700	0.0000700	0.0000700
Jan., 1912. Lab. 20° C. / Pens 12° C.	0.0000625	0.0000625	0.0000725	.....	0.0000658
Feb., 1912. Lab. 18.5° C. / Pens 12° C.	0.0000650	0.0000750	0.0000850	0.0000700	0.0000737
March, 1912. Lab. 20° C. / Pens 12.5° C.	0.0000900	0.0000800	0.0000850	0.0000750	0.0000825
April, 1912. Lab. 24° C. / Pens 17° C.	0.0000800	0.0000825	0.0000775	.....	0.0000800
May-June, 1912. Lab. 25.75° C. / Pens 25.5° C.	0.0000950	0.0000825	0.0000750	0.0000850	0.0000844
July, 1912. Lab. 28° C. / Pens 25.5° C.	0.0000650	0.0000700	0.0000750	0.0000700	0.0000700
Average	0.0000668	0.0000660	0.0000678	0.0000624	0.0000661

A study of the above table discloses many interesting facts. The results taken month by month naturally fall into four periods. There was scarcely any variation during the months of July to November, inclusive, the average M. L. D. for all classes of pigs running 0.0000519, 0.0000519, 0.0000511, 0.0000544, and 0.0000577. For December and January, these figures increase rather suddenly to 0.0000700 and 0.0000658, respectively. For February, March, April and May-June, they still further increase to 0.0000737, 0.0000825, 0.0000800, and 0.0000844, the high mark. For July, they drop again to 0.0000700.

That this variation might have been caused by any change in the test substance is hardly conceivable. As already stated, the ouabain crystals were kept in dry form—fresh solutions being prepared for each series of tests. To guard against possible mistakes in making up these solutions, the results were in several instances checked against new solutions. Moreover, it is not at all probable that ouabain in dry crystalline form, would remain unchanged for a period of five summer and fall months and then deteriorate during the cold winter months. To make sure of this, however, a new sample of ouabain was procured in July, 1912, and tests were run on this in comparison with the old sample, whereby practically identical results were obtained. Moreover, the melting points of both samples were determined and found to be the same, namely 188 to 189.5° C.

The cause or causes of the variation seem therefore to be narrowed down to the questions of temperature and season, for the average M. L. D. for each of the classes of pigs, during the whole year are nearly identical, namely:

Small males	0.0000668
Large males	0.0000660
Small females	0.0000678
Large females	0.0000624

That for the large females is slightly lower owing to the fact that no pigs of this class were available for the tests during two of the months when the results on the other classes were high. It is apparent, therefore, that sex and size may be disregarded and that just as nearly uniform results will be obtained, if indeed, not more so, by running a sufficient number of pigs in each test, eliminating the factor of sex, and basing all doses on 250 gm. of animal weight.

But not so with the questions of temperature and season. These factors undoubtedly play an important part in the cause of the observed variation but the data so far obtained do not in any satisfactory way make clear just how these factors work. A continuation of this study will be made in order to throw more light on the question.

That the temperature alone is the cause of the variation, however, is clearly shown not to be the case. The M. L. D. does not directly respond to observed temperatures, but it may be seen that in a general way, the resistance to ouabain poisoning is greater following a long continued period of cold weather, and is lower following a long period of hot weather. Thus the results of July and August, 1911, were obtained during a protracted spell of the most sultry and oppressive weather noted in Philadelphia in many years. The resistance, however, continued low throughout the following fall months, and it was not until December and January that any noted increase in resistance occurred. Again this resistance having steadily increased under continued cold weather until the

M. L. D. became 0.0000825 in March, this figure was practically maintained throughout the warmer spring months and did not drop again until July, when it went down to 0.0000700.

If sudden changes, or temporarily higher or lower temperatures, alone caused marked changes in resistance, it might be possible to regulate the temperature during the period of a test so as to guarantee uniformity of result. Such, however, is true only to a certain extent as will be shown later. In July, 1911, with an average laboratory temperature during tests of 27° C., the M. L. D. was lower than in July, 1912, with an average laboratory temperature of 28° C. The latter, however, was only temporary and had been preceded by an unusually cool and pleasant spring and cold winter, while the July of 1911 was sultry and humid throughout and was preceded by a hot and oppressive spring. General seasonal conditions therefore play a most important part in this variation in susceptibility.

On the other hand, that marked changes in temperature have an immediate effect on susceptibility is shown by the following experiment. The male pigs, large and small, used in the January, 1912, experiment were found to have a M. L. D. of 0.0000625. This figure was obtained in the usual way by keeping the pigs in their regular city quarters for a week or more where the average temperature during that time was about 12° C. The pigs were then transferred to the laboratory during their 24 hours of testing, where the temperature averaged 20° C. Having a sufficient number of male pigs left over, we determined, therefore, to observe the M. L. D. on this same lot of pigs at the temperature of their quarters, namely 12° C. Accordingly, on the following day, we injected some of these remaining pigs in their quarters and allowed them to remain there during the 24 hours of test. The temperature during this time ranged from 8 to 14° C. and the pigs used varied in weight from 300 to 505 gm. The result was as follows:

Dose		Results	Dose		Results
0.0000400	—	Recovered	0.0000500	—	Recovered
0.0000450	—	Recovered	0.0000550	+	Died
x0.0000475	+	Died	0.0000600	+	Died
0.0000500	+	Died	0.0000625	+	Died
			0.0000650	+	Died

M. L. D.=0.0000475.

As a check on the regular results whereby an M. L. D. of 0.0000625 was obtained, five additional pigs, ranging in weight from 340 to 400 gms. were then transferred to the laboratory, where the temperature ranged from 22 to 24° C. and were then injected and kept during the test, with the same result as was obtained before, as follows:

Dose		Results	Dose		Results
0.0000570	—	Recovered	0.0000600	—	Recovered
0.0000600	—	Recovered	x0.0000625	+	Died
			0.0000650	+	Died

M. L. D.=0.0000625.

It is apparent therefore that in cold weather the tests should be made in a room at normal temperature—say 22 to 25° C. But on the other hand, pigs inured to colder winter weather, when tested in a comfortably warm place, are more resistant than those which have been subjected for a long time to hot, sultry summer weather.

We are forced to the conclusion that in order to secure the highest possible state of uniformity for the heart stimulants by means of minimum lethal dose

guinea pig method, standards should be based upon a standard M. L. D. of ouabain for 250 gm. of animal weight and we would propose for this standard, a dose of 0.000066 gm. crystallized Strophanthin (Thoms), or Ouabain. Each lot of 50 to 100 pigs should be kept for one week under proper conditions of ventilation, feeding, temperature, etc., and the M. L. D. of ouabain, irrespective of size and sex, be determined at normal room temperature. The ratio of this result to the standard M. L. D. of 0.000066 per 250 gm. of animal should then determine the standard for all preparations to be assayed by means of this lot of pigs. Such a procedure would practically eliminate the variation of 22.7% below to 27.7% above, which represents the extreme range of variation observed during the whole year's experiments. That standarization without this precaution, however, is a vast improvement over no standarization is apparent when we realize that the natural variation in the heart stimulating drugs amounts to several hundred percent.

We are also forced to the opinion that a complete and satisfactory biologic assay process for the *standardization* of the heart tonics, whether by means of guinea pigs or other mammals, or by means of frogs, is hardly yet feasible, for introduction into the Pharmacopœia. It would be exceedingly difficult to lay down any concise, rule of thumb method of *standardization* which could be followed by one inexperienced or but little experienced in the art, with the hope of getting concordant results, and particularly this is the case when we consider that the Pharmacopœia has the force of inflexible authority stamped upon it by its relationship to State and Federal laws. This does not preclude the possibility, however, of making official certain ***minimum*** biologic requirements, using guinea pigs or frogs, to guard against fraudulent, inert or badly deteriorated drugs and preparations.

A further consideration of the cost of the guinea-pig method is appropriate at this time. The advocates of the frog method for the standardization of the digitalis series criticise the Reed and Vanderkleed guinea pig method on the ground that it is too costly as compared with the frog method. Haskell[1] says: "There can be no question as to the economy of the different methods. Frogs for an assay cost us fifty cents, guinea pigs would cost us about $4.00." Worth Hale[2] says: "Frogs for an assay would cost approximately 50 cents. If mammals are used on the basis that at least three should be used for each assay, the cost would be from $2.00 to $3.00." Walters & Haskell[3] say: "In the assay of the digitalis preparations by the 'one hour' frog method we practically never use more than 18 frogs, the cost of which varies from 40 to 75 cents. Our ignorance of the routine use of the guinea pig method prevents us from stating definitely the cost of an assay. It scarcely seems probable, however, that on an average, less than six or eight animals would suffice. The guinea pigs we have been able to obtain have cost us from 40 to 75 cents apiece, making the probable cost of an assay from $2.00 to $6.00, about 800 percent greater than the frog method."

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[1] Physiologic Drug Testing. J. A. Ph. A., July, 1912.
[2] Hygienic Lab. Bulletin No. 74, p. 15.
[3] Susceptibility of the guinea pig to poisoning by digitalis. J. A. Ph. A., July, 1912.

It is perfectly apparent that these writers all calculate the cost of one assay by multiplying the *number of animals used* by the value of one animal. In our routine work, however, we use the animals over and over until they are killed, only requiring that four or five days elapse between injections and that they appear normal. The fact that it is possible not only to use the pigs over and over but also to obtain accurate results thereby, has been proven by us many times, by determining the M. L. D. of the same preparation both on "used" and "unused" pigs. We have further proven this by using "unused" and "used" pigs in the same series. In all cases, the results obtained from both classes of pigs have been practically concordant.

Following are typical examples of the results obtained from these experiments:

Experiment No. 1: The doses given represent grams of ouabain per 250 gm. body weight of animal:

USED PIGS.
Temperature in laboratory 15 to 25° C.
Pigs varied in weight from 205 to 295 Gms.

Dose	Results	Dose	Results
0.0000625	Recovered	0.0000675	Recovered
0.000065	Recovered	0.000070	Recovered
0.000065	Recovered	0.000070	Recovered
0.0000675	Died *	x0.0000725	Died
0.0000675	Recovered	0.0000725	Died
		0.0000725	Died

M. L. D.=0.0000725.

* Died "out of order."

UNUSED PIGS.
Temperature in laboratory 15 to 22° C.
Pigs varied in weight from 235 to 335 Gms.

Dose	Results	Dose	Results
0.00004	Recovered	0.0000625	Died *
0.00005	Recovered	0.000065	Recovered
0.000055	Recovered	0.000065	Recovered
0.00006	Recovered	0.0000675	Recovered
0.00006	Died *	0.0000675	Recovered
0.00006	Recovered	0.00007	Recovered
0.0000625	Recovered	0.00007	Recovered
0.0000625	Recovered	x0.0000725	Died
		0.0000725	Died

M. L. D.=0.0000725.

Experiment No. 2:

USED PIGS.
Temperature in laboratory 18 to 24.5° C.
Pigs varied in weight from 210 to 300 Gms.

Dose	Results	Dose	Results
0.000075	Recovered	0.0000725	Recovered
0.000060	Recovered	0.0000725	Recovered
0.0000625	Recovered	0.000075	Recovered
0.000065	Recovered	0.000075	Recovered
0.000070	Recovered	x0.0000775	Died.
0.0000725	Died *	0.000080	Died
		0.000080	Died

M. L. D.=0.0000775.

* Died "out of order."

UNUSED PIGS.
Temperature in laboratory 18 to 24.5° C.
Pigs varied in weight from 210 to 345 Gms.

Dose	Results	Dose	Results
0.000057	Recovered	0.000070	Recovered
0.000060	Recovered	0.0000725	Recovered
0.0000625	Recovered	x0.000075	Died
0.000065	Recovered	0.000075	Died
		0.0000775	Died

M. L. D.=0.000075.

Experiment No. 3: Eight pigs which had previously been used for testing antitoxin were divided into two lots of four pigs each. These were injected with sub-minimum lethal doses of 0.00003 gm. and 0.00004 gm., respectively, per 250 gm. body weight of animal. The pigs were then mixed, and after allowing three

days for recovery, the M. L. D. on these "used" pigs was determined in comparison with a series of "unused" pigs, with the following results:

USED PIGS.
Temperature of laboratory 27 to 30° C.
Pigs varied in weight from 300 to 440 Gms.

Dose	Results	Dose	Results
0.000050	Recovered	0.000075	Recovered
0.000060	Recovered	0.000080	Very sick—Recovered
0.000065	Recovered		
0.000070	Recovered	x0.0000825	Died
0.0000725	Recovered	0.000085	Died
		0.000090	Died

M. L. D.=0.0000825.

UNUSED PIGS.
Temperature of laboratory 25 to 26° C.
Pigs varied in weight from 255 to 385 Gms.

Dose	Results	Dose	Results
0.000055	Recovered	0.000080	Recovered
0.000060	Recovered	x0.000080	Died
0.000065	Recovered	0.000080	Died
0.000070	Recovered	0.0000825	Died
0.0000725	Recovered	0.000085	Died
0.000075	Recovered	0.000090	Died

M. L. D.=0.00008.

Having proven by the above experiments that it *is* possible to use the pigs repeatedly, *the cost of an assay by the guinea pig method is therefore dependent solely upon the number of pigs killed and not on the number injected.* In order to determine the condition of the heart, with the "one hour" frog method, *all frogs injected must be killed.*

In order to ascertain both the average number of animals used and the average number of animals killed, per assay, by the guinea pig method we went over our laboratory records and found that we had used 3,731 pigs for 333 assays, or an average of 11.2 pigs per assay. Of these 1,742 were killed, making an average of 5.2 pigs per assay. Guinea pigs cost us on an average 40 to 50 cents apiece, making the cost of a single assay range between $2.08 and $2.60. It takes from 14 to 18 frogs for one assay. Frogs cost us on an average of 75 cents to $1.25 per dozen or $1.12 to $1.88 per assay. It can be readily seen, therefore, that the cost of an assay by the guinea pig method is only about 56% greater than by the frog method, instead of 800% greater, as estimated by Walters and Haskell.

Since our experiments have proven that pigs which have first been used for testing antitoxin can be used for assay purposes, it can readily be seen that manufacturers who make antitoxin, can do this work at a still further reduction in cost, as pigs once used in antitoxin standardization cannot be used over again for that purpose.

Attention is also called to the simplicity of determining what the "end reaction" is in the case of the guinea pig M. L. D. method. A review of the detailed tables given in the first part of this paper shows that of the 560 pigs injected in the whole series of tests, only 41, or about 7%, died or recovered "out of order." In no series, except possibly that for small female pigs in July, 1912, would any one have difficulty in concluding what M. L. D. is really indicated. This is not so readily apparent in the case of the "one hour" frog method. In our paper read at Boston last year, we appended some results obtained with frogs from various sources. We have continued these frog experiments but as they are foreign to the scope of this paper, we have presented them in another communication.

SUMMARY.

1. Sex and weight may be dismissed as unimportant in the variation of guinea pigs to ouabain poisoning.

2. Season and temperature are to be regarded as the principal causes of this variation.

3. Guinea pigs inured to cold weather are more resistant to ouabain poisoning than those which have been subjected to a continued season of torrid weather.

4. Increased resistance brought about by acclimation to cold weather persists well into a subsequent heated season, and vice versa.

5. Assays should be conducted at average normal room temperature.

6. To secure the highest degree of accuracy in standardization work, the standard should be based upon a standard minimum lethal dose of 0.000066 gm. ouabain for 250 gm. pigs.

7. The extreme average variation for all classes of pigs ranged from 22.7% below to 27.7% above the average, during the whole year.

8. The cost of the guinea pig assay process depends solely upon the number of pigs killed and not upon the number injected, as pigs which survive may be used over again with accurate results.

9. Out of 560 pigs injected in the series of tests only 7% died out of order, thus rendering easy the determination of the "end reaction."

10. No biologic assay process for the purpose of *standardizing* the heart tonics is advisable for introduction into the Pharmacopœia, but the setting forth of certain *minimum* biologic requirements, to guard against fraudulent, inert, or badly deteriorated drugs, and preparations, is feasible.

PHYSIOLOGIC LABORATORY OF H. K. MULFORD CO., August 6, 1912.

DISCUSSION.

Prof. L. E. Sayre said that this paper was a very valuable presentation of some important subjects to this Association, and he wanted in particular to call attention to the last paragraph, No. 10:

"No biologic assay process for the purpose of *standardizing* the heart tonics is advisable for introduction into the Pharmacopoeia, but the setting forth of certain *minimum* biologic requirements, to guard against fraudulent, inert or badly deteriorated drugs and preparations is feasible."

Prof. Sayre said he wanted to emphasize that statement as meeting his heartiest approval. At one time every one thought diphtheria serum could not be introduced into the Pharmacopoeia with a standard for it. He had championed the idea that it could, and it took that form and was now in the Pharmacopoeia. He hoped that the coming Pharmacopoeia would seriously consider the statement of a biologic method or standard, agreed upon by biologists.

H. C. Hamilton, of Detroit, asked Mr. Vanderkleed if it was not just as necessary to use the standard when guinea-pigs were the test animal as when frogs were the test animal. He said he had not gathered from the presentation of his papers that he had recorded this point.

Mr. Vanderkleed responded that it was to determine that very thing—to throw light on whether or not it was necessary to do that—that this set of experiments had been made. As the report showed, there was a variation of from 22.7 percent below to 27.7 percent above the average, in the whole range. If the guinea-pigs were not standardized, there was a possibility of just so much variation.

Mr. Hamilton said his conclusion from this was, that it was no argument against the use of frogs, necessarily, because the standard would have to be run in both cases.

Mr. Vanderkleed responded that it was so stated in the paper, that this did not preclude the value of the frog method, provided the frogs were standardized. But it did seem to

emphasize the greater necessity of standardizing the frog than the guinea-pig. If the guinea-pigs were not standardized, there would probably be a range within 10 or 15 percent, most of the time, whereas with the frogs the variation would be from 200 to 300 or 400 percent, for a difference of time of only one month.

The Chair said that he was unfortunately unable to follow the reading of these papers very closely, and what he had to say might have been discussed in the papers, but he knew that if the frog method was used, it was absolutely necessary to keep the frogs at standard temperature. Then, too, it was necessary to use caution in comparing the variation and the susceptibility of frogs and guinea-pigs. With one poison—for instance, ouabain—as compared with the susceptibility to another poison—for instance, digitalis—the variations did not run the same with frogs and guinea-pigs, and some caution would be necessary. It should not be taken for granted that because frogs and guinea-pigs varied in a certain way with ouabain that they would vary in the same way with digitalis.

WRITING AN ADVERTISEMENT.

To speak to possible customers, you get up a little form, worded as you think to the best advantage, and this is your advertisement. There are certain things that an advertisement should be. Above all, it should be truthful; it should not attempt to mislead or deceive. It should be clear; you are speaking to the lowest intelligence, as well as to the highest. This is not platform oratory, its only object being to get business, and any honest man's money is acceptable to you. An advertisement should be forceful, that is, earnest. In combining these three points, we think you get the basis of a successful advertisement. It should be truthful, clear, and earnest, just exactly the points upon which you would found an argument in talking to a friend.

There are other things that an advertisement may be, in addition to what it should be. It may be humorous, if you wish, and if you are able to tell what humor really is. Smartness is not humor, by a long shot, although people addicted to it evidently think it is. Flippancy is not humor. Humor is a kindly something which enables a man to present an argument in a genial way. The American people are great lovers of humor and things appeal to them which would not appeal to the peoples of other lands. A really humorous advertisement carries weight of its own, and is therefore valuable. A great many advertising experts decry the use of humor, but the writer believes it has its uses and is valuable in its own place.

Humor is an edged tool, however, and must be carefully handled. What you want to be is genial, not humorous at the expense of somebody else. A rough joke nearly always means anything but a joke to its victim. What makes others laugh, makes him squirm. Therefore, do not aim your wit at the religion, or the politics, or the infirmities, of others. These are three great points to be avoided, as you have learned in your daily intercourse with others, and here again we see that talking in an advertisement is much like having a personal conversation with a friend.—*W. S. Adkins in National Druggist.*

Section on Pharmacopoeias and Formularies

Papers Presented at the Sixtieth Annual Convention

WHY PHYSICIANS DO NOT READ THE PHARMACOPŒIA?

H. L. CHAMBERS, M. D., UNIVERSITY OF KANSAS.

If we trace back the history of medicine and pharmacy as nearly to a focus as we can, we come to a condition substantially as follows: The learning that we should consider honorable, dignified, and worthy, was conserved in the priesthood. The medical profession was one of its potentialities. Pharmacy was to develop with and out of internal medicine, being for a long time of equal advancement with therapeutics. At the same time, i. e., when both medicine and pharmacy were unevolved possibilities of the priesthood, there was as now a body of alleged learning, but which contained a considerable proportion of error and even of fraud, and which we now call quackery. This mass of truth and error insofar as it came to affect medicine and pharmacy, was in the hands of two sets of people—the inorganic chemistry belonged to the alchemists, and the organic chemistry including the pharmacy, was exploited by the witches and sorcerers.

Please bear with me while I point out that this group of irregulars, who are always bigoted, and often intellectually dishonest, and morally perfidious, has, nevertheless done much to further the development of science, especially the practical applications of science. They are on this account to be considered in finding answers to the questions now under discussion.

As the evolution of general and special learning and practice progressed, the physician was evolved from the priest, the surgeon from the barber, and the chemist from the alchemist. Pharmacy seems to have developed in a general way about as fast as the demand for it arose. Naturally the honorable side of it was in the hands and under the direction of the physicians; the other side remained with the witches and other irregulars of various kinds. In the next phase, some physicians will be found specializing in the preparation of medicines, and some will have taken up this work who are not and never were physicians. This seems to be the origin of pharmacy as a distinct profession, and is, I believe, true, in every part of the world. As populations grew denser and conditions more stable, the consensus of opinion and practice of various groups of physicians and pharmacists would crystallize into sets of pretty definite rules of practice—and pharmacopœias were born. Naturally each country had its own, maybe even several—and they were influenced in this by social, racial, and political considerations, as well as by medical and pharmaceutical ones. You remember that our first Pharmacopœia in this country was published in 1778, for the use of an army hospital. The Massachusetts Medical Society in 1808 published

a Pharmacopœia after trying vainly for three years to get the cooperation of medical bodies in other states. There were other local efforts along the same lines, but no general one until Dr. Spalding started it in 1817. His scheme, you remember, was to divide the United States into four districts, make a convention of representatives from every medical institution in each, let each convention make a Pharmacopœia, and from these four district Pharmacopœias, to compile a national one.

With some modifications this plan was carried out and the first "U. S. P." was the result. If you note that the whole of it came from the medical profession, it seems reasonable to suppose that medical men would read it.

In the nine decades that have passed since that Pharmacopœia, there have been many changes that affect both it and the physician's relation to it. The physician has greatly modified and, we hope, improved his therapeutic armamentarium. Of the things that now interest him in a practical way, climatology, balneology, mechano—thermo—electro—and psycho—therapeutic measures cannot well be included in the Pharmacopœia. The inoculations, vaccinations, and most of the serum treatments must be negotiated without its guiding influence. Moreover, the modern physician is interested in keeping well by preventing disease, and the Pharmacopœia can give him no help here because it knows nothing about potable water, respirable air, nor edible milk. The surgeon's work is fundamentally mechanical so far as his therapy is concerned and the Pharmacopœia can furnish comparatively little that will supply his real needs. Suppose, however, that one desires to use some of the preparations mentioned in the Pharmacopœia. He relies on his local pharmacist or on the name of some pharmaceutical manufacturing house for assurance that the material is right. These men are far more expert and experienced chemists than he is, and his course in accepting their conclusions in such matters as more reliable than his own, seems fully justified.

Following this idea, he rarely puts any drug to a chemical test, since if there be any question about its purity, it is much easier and cheaper to throw it away and get some that is above suspicion.

Viewed in the light of these facts we should not expect physicians and surgeons to spend much time in the study of the Pharmacopœia, and I feel sure they do not.

Let us approach this question from another angle. Most of the physicians are engaged in practice, otherwise they do not interest us in this discussion. The practicing physician ought to be above all else a practical physician, and as such his primary interest must center in the means that promise most and best results. Being rather far-sighted he wants to know the cost in risk and actual damage now and hereafter of the results that he seeks. This means with reference to drugs that he is interested in their physiological action, and in their therapeutic and toxicologic possibilities. Since the Pharmacopœia knows nothing about any of these things, he does not turn to it when he needs help.

The desire on the part of chemists and others for authoritative standards and tests has had its influence on the development of the Pharmacopœia, tending to put it still further away from the practitioner. It has now become a large volume with formidable catalogues of tests, processes and assays, none of which

the physician expects to try out for the reason that he is more than willing to accept the conclusions, amounting to warranties, of his pharmacist.

Suppose one is in doubt about the compatibility of the ingredients of a proposed mixture. The Pharmacopœia has no direct information about chemical incompatibles and none at all about physiologic ones. Maybe he desires knowledge of the proper dose of a given drug for producing the action indicated, and wishes to know how often to repeat the dose to maintain such action. The Pharmacopœia gives only indefinite information about the size of dose required, and none at all about the frequency of repetition.

Summarizing the discussion thus far, we may say that the physician has two sufficient reasons for not reading the Pharmacopœia, viz.: First. He fully trusts the application of its information to the pharmacist without question. Second. The information he seeks for practical application by himself is not contained in the book.

There remains yet to be noticed the effect on the physician of the illegitimate branch of the science and I hope no one will be offended personally or professionally if I classify the Pharmacopœia with its direct associations as the present representative of what I have described as honorable, dignified, and worthy learning of the ancients, and classify the makers of pharmaceutical specialties, synthetics and the like as the modern representatives of what I have called the illegitimate branch of the science. No one may deny that these people know something or that they make important discoveries in medicine and pharmacy. So far back as we can trace them they have known some real science and have discovered actual and important truths.

They differ from other scientists in that they are primarily commercial rather than scientific, the end or aim of their effort is the accumulation of money rather than the discovery of truth, i. e., the scientists represented in the Pharmacopœia make money and leisure a combination for the discovery of truth, while the other fellows make of science and discovery a means for the attainment of wealth and ease. The latter being only commercial scientists, are not so careful in statements concerning their products or discoveries as are the other people, and since they nearly all claim some special skill, some secret process better than others know, or some new combination hitherto unknown, but now nicely worked out and patented or copyrighted by them and obtainable nowhere else—it is easy for them to make claims that will catch and hold the physician's interest. Even the most exaggerated claims find believers somewhere. The untried products of these commercial pharmacists are usually claimed to be new, and also said to possess distinct advantages over the old tried-out things discussed in the Pharmacopœia. The physician is thus led by his interest and his reading away from the Pharmacopœia and the preparations that it describes. Moreover, since these specialties, synthetics, etc., are sold at a much larger profit than the standard drugs, their promoters can afford to send skillful detail men about the country, persuading the medical men and sometimes even the pharmacists to prescribe and to stock them. This and what grows out of it also tends to keep the physician away from the Pharmacopœia.

When there is a revision, there are changes in the names of some preparations and changes in the compositions of some others that retain former

names. This would seem to be an urgent reason for reading the Pharmacopœia, but the manufacturers of specialties supply the profession with neat cards, stickers and the like showing in nicely tabulated form what these changes are and so keep the physician from feeling any need for it. Since these commercial pharmacists find it greatly to their financial advantage to keep the physician away from pharmacopœial preparations, it seems logical to suppose that they will continue to make every reasonable effort to keep him using secret and proprietary ones. There is nothing in this, tending to increase the popularity of the Pharmacopœia.

Are you ready for the condensed answers to the questions?

Q. Do the physicians read the Pharmacopœia?

A. They do not.

Q. Why do they not?

A. First. Those who prescribe standard drugs rely on their pharmacists to see that the preparations are up to the standard. Second. Those who dispense standard preparations, rely on their manufacturing pharmacists for assurance that the drugs are right. Third. Those who either prescribe or dispense specialties, novelties, etc., must rely on other sources than the Pharmacopœia for their information.

I append a little tabulated statement covering a small investigation made among my medical neighbors, and bearing somewhat on the questions I have tried to answer.

Number	Years in Practice	Where educated.	Other Degrees	Dispense or Prescribe	Real Phar.?	Why? Other Remarks
1	12	Kans. Cty Med. College, now University of Kas.	Ph. G.	Both	Yes	Been a pharmacist and taught it. It is not generally read because not taught in med. schools.
2	34	Mo. Med. College.		Both	Yes	Does not read much nor buy late editions. Physiological action of drugs desired.
3	30	Ky. School of Med.		Both	Yes	Not last one. Reference only. More practical matter desired.
4	20	Meharry Med. Col.		Both	No	Not necessary.
5	27	Bellevue, University of Vt., E. M. I.	A. B.	Both	No	Get needs supplied in Materia Medica.
6	22	Bellevue.	Ph. D. A. M.	Both	No	Get what is wanted from books on Internal Medicine.
7	13	University Med. College, Kan. Cty., Mo.		Disp.	No	Never felt need of it.
8	21	American Med. College, St. Louis.		Both	No	Contents not interesting, useful or practical to practitioners.
9	17	Kans. Cty. Med. Col. now Univ. of Kans.	M. S.	Both	No	Not useful to me. Make it for pharmacists only.

There are no recent graduates working near me, so my canvass includes none. These men are all in active general practice, and are as well read as our region affords.—H. L. C.

Section on Education and Legislation

Papers Presented at the Sixtieth Annual Convention

SUGGESTIONS ON THE TEACHING OF PHARMACEUTICAL ARITHMETIC.

MISS ZADA M. COOPER, PH. G., IOWA CITY, IOWA.

Because of the existence of an amazing amount of ignorance of pharmaceutical arithmetic on the part of those entering the profession it seems to me a subject worthy of consideration. If some of the causes for this ignorance can be better understood there is perhaps a greater possibility of improving the condition.

I say amazing amount of ignorance because of the statement made by members of the Board of Pharmacy in my own state that candidates for registration are often unable to solve the simplest problems and that the number who fail in this particular is sufficiently large to bring the deficiency plainly to their attention. Also I have read at various times that similar conditions exist in some other states and I have often noticed that some students who are quite proficient in other studies, particularly those branches which might be classed as memory studies, materia medica, pharmacy, pharmacognosy, are hopelessly lost before the task of solving some comparatively simple problem in arithmetic. Whether it is just a coincidence or not, I have noticed that almost all who do well in chemistry also do well in arithmetic. I have thought that perhaps the best explanation of this is that both require the use of the student's reasoning power. However, that is not the subject under discussion.

In the beginning I wish to say that if the personal pronoun occurs frequently in this paper it is simply because what I have to say is based upon conclusions drawn from my own experience, first, from the way the subject was presented to me as a student and later, from my observation of results of my own teaching of the same subject.

Theoretically, I believe the teacher of Pharmaceutical Arithmetic has a right to assume that in the beginning the members of his class have a thorough knowledge, a practical working knowledge, of the fundamental principles of arithmetic, but, actually one is confronted with an entirely different condition. It is the province of the teacher of the subject to apply arithmetic to pharmacy. I can think of no arithmetical process with which the beginning student of pharmacy should not be familiar. Most of our students come to us with diplomas from high schools of recognized standing. Some, it is true, have had only two years in high school, but that should make no difference in this case except that perhaps more advanced training makes the earlier subjects easier. As a matter of fact I have noticed that almost as often as not the poor student in this particular is the one with the diploma. During the past year the very

poorest student in my class had been graduated from what, one had a right to suppose, was one of the best high schools in our state. If I am correctly informed few pupils have any arithmetic after completing the grammar grades, since in some high schools it is offered as an elective. However, that is neither here nor there. My contention is just this: that it ought not to be necessary for the teacher of Pharmaceutical Arithmetic to teach fundamental principles of arithmetic itself.

One of the most serious conditions the teacher has to face lies right here. The total time allotted is only sufficient to cover the subject in hand and in justice to the majority of the class, the teacher cannot spend much of it in teaching fundamental principles to the minority, which minority in my experience is always present. It is possible to make some of these explanations in passing but not enough and the only alternative, it seems to me, is to give to these particular students one's personal attention out of class hours. Even this I have found to be inadequate—it helps but it cannot take the place of weeks of training or undo the bad habits of study in earlier years.

Just here, it might be best to try to account in some measure for this condition. I do not mean to arraign the public school system though the fault in part may be there, neither do I blame the teachers as individuals though I believe that sometimes they are responsible. It is probably due to a combination of conditions. We all know that from the entrance into the kindergarten to the exit from college in whatever line of study they may undertake, there are some who have a faculty of getting along and of making passing grades, and yet their knowledge is always superficial, never thorough. Such students just skim the surface of things, they never delve deep, they never know the reasons why and surface studying possibly has a much worse effect on a mathematical subject than some others. Then, and I believe this to be largely responsible for the inability to apply knowledge later, arithmetic is a thing which of necessity requires the learning of many rules. Even if they are reduced to a minimum and the reason for every one is explained in detail with due emphasis on the dangers of depending on memory, some pupils, without doubt, do little more than memorize the rule. It is only too obvious that solving problems is not a matter of memory alone. Then there is the excuse usually offered by the student himself that his mind is not mathematically inclined (in his own language, "Arithmetic always was hard for me"). In general this deserves little weight. Occasionally it may be really true but more often than not it is simply that the reasoning faculty has never been developed.

So much for general difficulties. Some need to be considered more specifically. One of the first things which becomes evident is insufficient knowledge of fractions, particularly an inability to handle decimals with ease and accuracy, and to convert common fractions to decimals and vice versa with any degree of accuracy or rapidity. This I believe to be important since it is customary to express small doses in common fractions if in Apothecaries' weight or measure, in decimal fractions if in Metric quantities. Then a thorough knowledge of decimals is a necessity in accurately using the Metric system, which every student is obliged to do. Later, this lack of information involves the student in all sorts of difficulties when dealing with percentage and specific gravity. In

fact, he needs it everywhere—he cannot get on at all without it, these points mentioned are only relatively more important than others. The next place that faulty preliminary training is especially evident is in percentage and its applications where sometimes students do not seem to know the first principles. Another deficiency of large importance is proportion and what it involves. Students tell me that they do not know how to state a proportion, that they never understood the placing of the different terms. I am at loss to say why they have not understood this—I only know it is so and as with the other difficulties mentioned it is a condition we have to face. There is no other reason for tracing them back so far except that; unless one recognizes the conditions and takes them into account in teaching Pharmaceutical Arithmetic, it is impossible to hope for any great success. I am well aware also that, in college at least, the proportion of students who come well prepared is large but not so large that the unprepared may be ignored. So much for the preliminary equipment of the class with which one has to work.

Considering the various subdivisions of Pharmaceutical Arithmetic somewhat in the order they are usually taught, the various systems of weights and measures are of primary importance. Most students are more or less familiar with all of these except the Metric and that, being simplicity itself, offers no special difficulties in teaching except to those people before alluded to who have trouble with decimals. One thing that might be worth mentioning is that the use of models of the units of length, measure and weight prove helpful to the student in forming mental pictures of these various measures and making the whole subject less abstract. Until the student thinks in Metric quantities there is little meaning in the system, for him. It is, of course, expected that each individual shall be thoroughly familiar with all of these systems and where and when each is used before passing on to the consideration of their relation to each other which is a very much greater undertaking.

Much as I have said about the evils of memorizing rules, here, I insist on the students memorizing certain equivalent weights and measures and not simply the fewest possible number that one must know to get along at all. I do this for the reason that there are certain of these that will probably be needed several times every day and I consider it important that they have these at their tongues' ends because of the immense saving of time. Life is too brief and time too valuable to waste it in looking up every equivalent or in making round-about calculations. For example I think it absolutely necessary that students learn that there are 29.57 gm. in a fl. oz., 28.35 gm. in an Av. oz., 31.1 gm. in a Troy oz.; that 1 gm.=15.432 gr., 1 gr.=64.9 mg., 1 lb.=453.592 gm., 1 M.=39.37 in., 1 in.=25.4 mm.; that there are 16.23 m. in 1 cc., 473.179 cc. in a pint; that 1 m. of water weighs .95 gr. Though enforcing this as rigidly as possible, at the same time I emphasize the fact that many of these can be calculated in case they are forgotten. In other words, I show them how they have been arrived at and which are the ones that are primarily necessary. Most of these are obvious to the deep thinking student, but because of the others one can take nothing for granted. To illustrate, I show them that if they remember that there are 15.432 gr. in a gm., the weight of each ounce in gm. can be calculated by dividing 480 gr., 45.46 gr., and 437.5 gr., respectively, by 15.432. Similarly I show them that

7000 gr. divided by 15.432 gives 453.592, the number of gm. in a lb., as does multiplying 28.35 by 16. Other instances like these might be cited but probably these suffice. Likewise, I show them that, remembering that 1 M. equals 39.37 in., the reciprocal of these figures gives the fraction .0254 M. or 25.4 mm., the equivalent of 1 in.; also that the reciprocal of 15.432 gives .0649 gm. or 64.9 mg., the equivalent of 1 gr. Students will question the need for all these but with a little experience will see the convenience and saving of time. Take, for instance, the conversion of doses from one system to another; so far as it is consistent with accuracy such calculations should be mental ones and the student finds he needs both 15.432 and 64.9. Usually in instances like this the approximate equivalent would be used but it is just as easy to learn the exact one in the beginning. To go a little farther, I show them than .95 gr., the weight of 1 m. of water, is obtained by dividing 454.6, the number of gr. in a fl. oz. by 480, the number of m. in a fl. oz. Similarly the relation existing between U. S. fluid measures and Imperial fluid measures. There are a good many more that I emphasize the convenience of knowing but do not ask them to memorize, like 2.11 pints in a liter, 3785.43 cc. in a gallon, 1 Imperial gallon of water weighs 10 lb. Av.

The next important subject is specific gravity and here for the first time one is obliged to deal with rules and it is necessary to guard against those rules becoming meaningless forms. For example, to obtain the specific gravity of a solid, divide its weight in air by its loss of weight in water. While to some the reasons are quite plain—to others it is quite necessary to explain that since any solid immersed in water displaces its own bulk which is equivalent to its loss of weight so one is simply dividing the weight of the substance by the weight of an equal volume of water. Another thing which applies everywhere but particularly when dealing with specific gravity is that often a problem may be solved in several ways. In reality the underlying methods are identical but details vary. In this way they learn to reason each question individually and not depend on one hard and fast rule. To illustrate take this problem: A druggist buys glycerin, sp. gr. 1.25, at 20c per lb. and sells a pint for 80c. Does he gain or loose and how much? It will be seen at once that one must ascertain the weight in lb. of the pint of glycerin, since it was bought by the lb. This may be done by multiplying the weight of a pint of water expressed in gr. 1.25 and dividing by gr. in a lb. Thus—

$$(454.6\times16)\times1.25,$$

$$\text{Or } \frac{7273.6\times1.25}{7000}=\text{lb.}$$

The same process can be employed but using Metric quantities. Thus—

$$\text{Or } \frac{4\ 73.179}{\frac{(29.57\times16)\times1.25}{453.6}}=\text{lb.}$$

Or one may find the equivalent number of grains in a volume of water equal to a lb. of glycerin and divide that into the total measure. Thus—

$$\frac{7273.6}{(7000\div1.25)}=\text{lb.}$$

Likewise one may find the measure in cc. of 1 lb. of glycerin and divide that into the pint expressed in cc. Thus—

$$\frac{473.179}{(453.6 \div 1.25)} = \text{lb.}$$

It will be seen that the final result in each case is the same and though I do not believe the methods are equally good they are correct and sometimes a student will clearly see one and not another. Some may contend that so many methods lead to confusion in the student's mind. I can only say that I have not found it so, quite the reverse in fact. I believe there is nothing like seeing all around a subject to thoroughly understand it.

In proportion I make use of no unusual methods. If the student has understood it in his earlier studies he has no difficulty here except such as involve weights and measures and specific gravity and if these are well grounded he has none. I find one little thing helpful which I believe I can best illustrate by a problem. Cod liver oil has a sp. gr. of .92 and costs 60c a lb. What is it worth per gallon? I would have the student indicate the whole problem at once. Thus—

$$7000 : (7273.6 \times 8) \times .92 :: 60 : X \quad \text{or}$$
$$453.6 : (473.179 \times 8) \times .92 :: 60 : X$$

My idea is that no matter how many factors enter into any term of a proportion it is safer to indicate them all in the original proportion. Often they are more complex than this one given and the more complex the more danger of confusion.

Concentration and dilution are only applications of proportion and give no trouble to those properly prepared in its fundamental principles.

With percentage there is always trouble but most of this also is due to the lack of proper preparation. One thing might be worthy a little attention. Most of the texts advise the stating of a proportion and though this seems to help some students, to others it is more confusing than anything else. Again I can best illustrate by a problem. A certain drug contains 15% of extractive matter. How many gm. of extract can be obtained from 90 gm. of drug? By proportion we would have $100 : 15 :: 90 : x$.

The other method I use is simply that 15% means .15, since percent means by the hundred, and to obtain .15 of the total it is only necessary to multiply by .15.

Perhaps this is as good a place as any to say that no matter how much I may approve of the methods set forth in the text I may be using, I make it plain to students that they may use any correct method. Notice I say *correct* method. One should not tolerate for a moment the use of bad methods. I allow these variations from rule because sometimes a student has used some method until he uses it with ease and I see no logical reason why one should insist on taking the time to become familiar and speedy with another.

Alligation, I have found, has been very little taught in preparatory schools and one has to start practically from the beginning. After one has made plain the basic principles there are no difficulties except those that may be accounted for by unfamiliarity with proportions.

There is much in the manner of conducting a recitation to get the most out of it. I expect students to work all problems in the lesson assigned before coming to class but I never ask that problems be worked and handed in for correction. I believe that puts a premium on dishonesty. Instead I send a convenient number to the blackboard to work the problems I assign them and so far as possible I allow no notes made previously to be used. Then I expect an explanation of each problem, always insisting on the student's knowing the reasons for each step in the process. They soon feel the necessity of being able to work and explain the problem assigned since they know that a record of their recitations is always kept and that they in part make up the final grade. When one section has finished I send another to the board as before. In the meantime, I have those not at the blackboard working problems outside of those found in their text but on the same subject. These, I select from all the other books that I find available. I read the problems to them, trying so far as I can to vary the wording of these in order to make them think. I have used this plan for several years and find it valuable for several reasons. First, I believe there is nothing like a lot of drill to fix principles and methods firmly in their minds. Second, it promotes rapidity. There is nothing like doing a thing to enable one to do it easily. The path gets deeper every time it is used. Third, it helps me to know the capabilities of each individual better and the better I understand the individual needs, the more help I can be. If one is rapid but inaccurate I encourage accuracy even at the expense of speed. If another is slow he needs to learn to work more rapidly, though that is more a matter of temperament than training and is not to any extent within a teacher's control. When any given subject has been completed it is reviewed thoroughly, expecting students to be prepared on any part of it and here again as much as possible I give problems not in the text. Following the review, I usually give a written test these entering into the final grade, together with the daily recitations and final examinations.

Given reasonably good material with which to build and keeping one's class busy and interested with practical problems, real live questions, such as arise in their laboratory work or in business practice, they must be on the alert—there is no time for dreaming day dreams and it is only the very dull or poorly prepared individual who does not acquire at least a fair knowledge of the subject.

DISCUSSION.

Prof. Philip Asher, of New Orleans, said that the points brought out by Miss Cooper were simply reviewing the class-work over again, and he was reminded that the same faults that the students of Iowa possessed were possessed by those in the South, and doubtless by students all over the country. She had hit the key-note of the situation in using the expression, "There is a lack of reasoning power"; but he was not inclined to be so charitable as the writer. His idea was that it was not the fault of the teacher, but merely the natural tendency of students to skim lightly over the surface and not delve deeply into things. He did not hesitate to say that the modern system of preliminary education was wholly at fault. The large number of "ologies" that the modern system of school work wished to impose upon the young man was crowding out the more essential features that were needed in every-day life, whether one's vocation be that of shoemaker, carpenter, or pharmacist. The fact that arithmetic was the most essential of all studies was lost sight of. If arithmetic was properly taught in the primary schools, it would fit the student with reasoning power in after life, no matter what vocation he followed. Miss Cooper had stated that those

students who took kindly to chemistry also took kindly to arithmetic, and this merely emphasized the fact that such students had been properly drilled in the preliminary schools. He had been surprised on many occasions to have to stop sometimes in the latter half of his session, and attempt to show a student with a high school certificate the principle of simple decimals; and when it came to stating percentages decimally, as one-tenth or one percent, it was astounding to see the number of failures made by students who apparently had never heard of them before. Scientific work required a knowledge of these things, and they were being constantly used, and it was discouraging to have a student with a high school education look at his teacher as though he were stating an unheard of proposition. In conclusion, Prof. Asher, commenting upon Miss Cooper's statement that the metric system had given her no trouble, said that while he did not personally teach the metric system, he knew the complaint had always been made by the teachers of his school and others that it had been the greatest difficulty they had to contend with, though as a teacher he could not see why there should be any trouble in teaching anything as simple as the metric system.

PHARMACIST VERSUS PLUMBER.

At most the average ordinary prescription business does not exceed twenty a day. I believe the majority do less. These, when compounded, would require approximately fifteen minutes each or five hours' actual compounding time; average them at 60c each and we have the sum of $12.00 gross receipts on what you would say is a fairly good prescription business. The average cost of material on these would be about six dollars. You may say it would be less, but when you take into consideration the nature of most of the prescriptions as written today you will find these figures about correct; in fact, 41 percent of 3,000 prescriptions filled in six stores in Baltimore were for unofficial products (not counting patented chemicals).

This leaves you a balance of $6.00 gross profits for which you, Brother Pharmacist, give in return the most prominent and valuable space in your store, your highest paid help besides, and the most expensive equipment is usually installed. The general expenses as a rule are greatest in this department. What have you left when you deduct these items of expense from your gross profits?

If you had a plumber to do the work instead of a registered pharmacist he would charge $5.00 for his time, leaving you a dollar for your profit. Do you wonder why a brother druggist from Canada, who has two paying drug stores, in a recent conversation, said to me: "I do not cater to the prescription business; it does not pay at the prices we get and the time required to compound them. I can do more business and make more profit by keeping my clerks busy selling merchandise and my own make goods."—*Richard T. Messing.*

Section on Practical Pharmacy and Dispensing

Papers Presented at the Sixtieth Annual Convention

MASSA FERRI CARBONATIS.

L. E. SAYRE, LAWRENCE, KANSAS.

Responding to a request of the enterprising chairman of the Section on Practical Pharmacy and Dispensing, I offer, in discussion, a few remarks on Vallet's mass, suggesting a method for its improvement. There are many who complain that the present official formula yields a preparation which is too soft.

The sub-committee (No. 13) is now considering the advisability of revising this formula, and I have the consent of Mr. Raubenheimer to present his suggestions relating to proposed changes.

Besides the soft consistence of the mass, Mr. Raubenheimer points out other faults in the U. S. P. formula and process.

1. In order to completely dissolve the ferrous sulphate, and to prevent any loss by the formation of oxide or hydroxide, it is absolutely necessary to add a small quantity of diluted sulphuric acid.

3. The capacity of the flask, instead of 500 cc., could well be 1000 cc., which would greatly facilitate the washing of the precipitate. The codex now orders a 2000 cc. flask for the same quantity of chemicals.

4. Instead of washing by decantation it would be an improvement to use a syphon, which is also ordered in the U. S. P. process for Ferri Carbonas Sacharratus.

5. "Washing until the saline taste is gone." This in the presence of syrup used in the wash water is quite hard to determine. Much better and more correct pharmaceutically and chemically would be "until the washings show merely a slight cloudiness with barium chloride T. S.

6. "Drain the precipitate on a muslin strainer and express as much of the water as possible." This is a very wasteful method, so wasteful that the text-books state that instead of actual yield of 42 gm. (41.7) only 35-36 gm. of ferrous carbonate are obtained. The codex orders the strainer to be previously moistened with syrup, a method which is well worth adopting by the U. S. P. Revision Committee.

7. The magma is ordered to be mixed with 38 gm. of clarified honey and 25 gm. of sugar and evaporated to 100 gm. This evaporation to a definite weight is a decided advantage over the codex method which evaporates to the somewhat indefinite consistence of an extract.

To overcome the objection above referred to, in the beginning, namely the softness of the mass, it is recommended that lactose be substituted for sucrose.

It has the decided advantage of being less soluble than sugar, thereby acting as an absorbent and producing a better pilular mass. It acts as a reducing agent, the same as honey. The codex formula prescribes lactose. We have experimented with the above formula and find that the resulting mass, in the dry climate of Kansas, becomes too dry and hard, but by a proper addition of glycerin (also a reducing agent) a proper permanent consistency may be secured.

Vallet's mass is seldom kept in stock in the middle west but we find it is more frequently found on the prescription counter shelves in the east. In the west the saccharated ferrous carbonate is popular.

This latter preparation is standardized. There is no reason why the other should not be, as the process for analysis is very simple.

Mr. Raubenheimer suggests that the addition of a small amount of magnesium oxide to the magma before evaporation prevents oxidation and has a very decided advantage of imparting a greenish color to the mass, a very desirable feature.

If any of the pharmacists, interested in this Section, would care to experiment in making this preparation acting upon the above suggestions, their experience, if sent to me or to any member of Sub-committee 13, would be highly appreciated. Change present formula as follows:

1. Increase sugar from 25 to 35 and decrease honey from 38 to 25 gm.

2. Use lactose in place of sugar and honey (add 30 gm. lactose to drained magma).

3. Also add 5 gm. magnesium oxide.

And report results, with any suggestions.

DISCUSSION.

Prof. H. V. Arny, of New York, said this recipe of Mr. Raubenheimer's had been brought to his attention by that gentleman, and knowing how thoroughly Mr. Raubenheimer did everything he undertook, he himself, while a colleague of Mr. Raubenheimer's on Sub-Committee Thirteen, did not try out his recipe. On the road to Denver, however, he had stopped at Cleveland and had talked with Louis C. Hopp, also a member of the committee, and the latter agreed with Prof. Sayre that, by Mr. Raubenheimer's recipe, the mass, on standing, became too hard. Prof. Arny said he had had considerable experience with the U. S. P. recipe, and had not, as a rule, found the lack of stiffness described. It all depended on whether the manipulator got the magma off the strainer and thoroughly mixed. In his own work in Cleveland, he had been accustomed to take the samples made by the students and compare the iron content. There was nothing simpler than to find the iron content of the mass by the simple process of ashing. He had found in that way that the soft masses would run sometimes as low as 15 percent, and some ran up to 35 percent. Of course, he said, the operator could never get 42 percent. By this means, a fairly uniform product was obtained. In closing his remarks, Prof. Arny said he stood ready to confess ignorance upon one point: Although in making this mass practically the exact molecular proportions of crystallized ferrous sulphate and crystallized sodium carbonate were taken, yet, when these were mixed and put in a suitable bottle and corked, there was a large amount of carbon dioxide given off. He expressed the hope that someone could enlighten him on that subject.

Prof. Sayre asked Prof. Arny if he could tell the cause of the green color by adding magnesium oxide, and the latter replied that he could not. He said that Mr. Hopp had called attention to that point when he had seen him at Cleveland recently. He regarded it as an interesting thing. Mr. Hopp had taken some of this mass and made it into pills, cut-

ting one of them—a five-grain pill—and moistening by putting a drop of water on it and sprinkling a little magnesium oxide on top, when this green color appeared.

F. T. Gordon, of Philadelphia, asked Prof. Arny if he had ever tried glucose instead of sugar. Mr. Raubenheimer, he said, spoke of washing the precipitate with sugar-water, and he had wondered if he had ever washed it with a solution of glucose, which was a very powerful reducing agent, the tendency being, if there should be any ferric iron present, to return it to the ferrous state.

Prof. Arny replied that, of course, it was supposed to be made in the present recipe by using sugar or honey. He thought this would be a capital scheme, and that glucose would be better than glycerin.

Mr. Gordon went on to say that he had made an experiment with glucose in this way, especially with regard to iron salts, where it was necessary to keep the salt in a ferrous state, and had found glucose to have a positive action in preventing oxidation; or, if the substance was oxidized in the course of time, to reduce it. Sugar in that case was very apt to be converted into invert sugar. The only precaution was to test the glucose and see if it was free from sulphurous acid. Glucose, he said, did not get hard or brittle, did not dry out like sugar, or crystallize.

In answer to a question by Prof. Puckner as to whether he used the fluid or dry solid glucose, Mr. Gordon said he used the ordinary syrupy glucose. There were two commercial forms, he said, and if the operator ordered from the wholesaler he would probably get the saturated syrupy solution. Though glucose could be obtained in the dry, solid form, that was a detail he had not particularly considered.

Prof. Puckner said his reason for asking this question was, that he had had occasion to handle a great deal of glucose and dextrose, and had found them increased in purity in the last four or five years very markedly, the present degree of purity of commercial glucose being about as good as the highest grade four or five years ago.

Prof. Arny asked whether glucose would possess the desired adhesiveness. He thought it would necessitate establishing a standard for glucose, and making it official in the Pharmacopoeia. Mr. Gordon responded that it could be suggested that the glucose should be syrupy and free from sulphites. For practical working purposes, the syrupy glucose was much more convenient to handle than the dry.

Mr. Geo. H. P. Lichthardt said Prof. Sayre had remarked that he did not know about the use of this preparation in the West. In his state (California) it was practically obsolete—it was not used at all. The physicians there ordered Blaud's pills. The physicians were using that more and more in the last four or five years, since the introduction of albuminous compounds of iron, which had stimulated the use of iron; and the pharmacists had been trying to get them away from this by getting the doctors to prescribe the freshly-prepared Blaud's mass.

A member from Chicago, referring to this preparation of iron, said that he had no occasion to make Blaud's or Vallet's mass. In his section the formula was prescribed in the dry form absolutely, and nothing else. The ingredients were mixed dry, and this was insisted upon. He had found at a number of places in Chicago that this was growing to be the common habit.

Section on Commercial Interests

Papers Presented at the Sixtieth Annual Convention

ADVERTISING A RETAIL DRUG BUSINESS.

A. V. PEASE, FAIRBURY, NEB.

We are apt to think of advertising as a recent development of commercialism. But it goes back far beyond either modern or medieval buying and selling. The word itself means "to warn," and it is difficult to conceive of a time when signs and warnings did not play a part.

Advertising is as old as man, yes, as old as animate nature. The brightest plumed bird is first mated; the lion, whose roar strikes terror into the heart of his enemies is least molested and best fed. Philip of Macedon made the name of his phalanx a warning to other peoples and reaped conquest. Darius in publishing his might on the rocks at Behistun, used advertising to his everlasting fame. Ptolemy carved the Rosetta stone that will make his name known forever. Luther, knowing the value of courageous publicity, nailed his theses to the cathedral door. The word of mouth advertising given Napoleon made victory easy, saving much treasure and many men. Washington knew the value of reputation and fostered it. Lincoln at Gettysburg published to the world the greatness of his heart and made the conflict less harsh for the South.

Advertising is the heart and soul of business. The clean store, attractive window, orderly arrangement, complete stock, good quality, willingness to make exchanges or correct errors, prompt delivery, carefulness in accounts, all ask for more business. The doctor's genial greeting, his comfortable office, large case of instruments, evident patronage and prosperity ask why you are not his patient. The lawyer's large library and busy stenographer shout his success. Professional ethics forbid the use of printer's ink to increase business, but professional men welcome word of mouth advertising.

These forms of advertising are fundamental to business. No lasting traffic can be built without them. You are unconsciously advertising. If you believe in your business and know it to be honest, it pays to tell the people what you believe. The business man cannot be self-effacing. He must dominate. The political reformer who believes in himself and his remedy for social ills, gets nowhere until he tells the public and makes them believe.

It is easiest to follow the line of least resistance. The newspaper offers the least resistance to publicity. Have you ever tried it? Not tried at it but tried it out? Stuck to it until you began to feel the cumulative effects? How many buildings would Kodak occupy without the building power of printer's ink? Would phonographs sing at the world's dinner if newspaper space had not

pitched the key? Could Battle Creek serve the world's breakfast without white paper and black type?

Advertising is long range selling. Newspaper space talks to more people with less expense and the least effort. It multiplies your personality, enlarges your influence, lengthens your arm and augments your effect. An advertisement creates the desire to possess in the minds of hundreds at once. The personal sales depends on the right words and the evident sincerity of the seller. Just so the ad. Newspaper space is in general the best and cheapest of all advertising. By newspaper space I mean all periodicals.

I once heard the head of a great advertising agency liken the various kinds of advertising to the executive force of a railroad. Traffic Manager Trade Paper, Superintendent Specialty Advertising, Private Secretary Personal Letters, Highwayman Hand Bill, Section Boss Bill Board, Foreman Fence Signs, Walking Delegate Word of Mouth, all good, but the President, Chairman of the Board of Directors and General Manager is Newspaper Space.

To be satisfactory, space should be occupied regularly. Steady work brings results. Starting and stopping makes it harder to pull the load. You loose all the momentum gained by keeping under way. As well try to roof the house by putting on a few shingles occasionally.

How much space shall be occupied? Let us get at it this way. Suppose that you are doing $10,000 a year. Two percent of that is $200. There are two weekly papers published in the city. That allows $100 for each paper. Then the rate may be ten cents an inch. That permits in round numbers twenty inches single column each week, or ten inches double column; that is quite a good space for most merchants to occupy, if it is used every issue. And for the man who is doing only $10,000 a year it may seem large. But the cost of a year's advertising is small at two percent. It is easy and natural to spend more than that in unprofitable ways. Even one percent of the total business spent intelligently brings surprising results. Fixing a rate of ten cents an inch, I am supposing a circulation of about two thousand. Circulation is a delicate matter with most publishers. But the advertiser has as much right to know what he is buying at the newspaper office as the printer has when he goes to buy a suit of clothes or a ton of coal. I think that publishers who have foresight enough to make a reasonable rate to induce regular advertising show good merchandising sense.

Whatever amount of space you occupy, keep it all the time. For special occasions, increase it if necessary but never go below a minimum. Making a big effect and then falling back for breath does not look as if you had much force in reserve. People like a stayer. Feather by feather the goose is plucked. Who faints not, achieves.

Position is of great importance. If the regular publication of your ad is valuable, the same position is equally so. When you go to town you expect to find the butcher shop on the way, in the same place. You stop at your regular news stand for the morning paper and a cigar. If these were shifted around you would make no effort to find them. You would follow the line of least resistance. A good place for business suggests a good place for your business announcements. Get the best position in your paper if you can. Get a position that jumps out at the reader as soon as he sees the paper. Pay a little more if

you have to, just as you would pay more for a good corner store. Country publishers can learn much about the makeup of their papers from some of our great national weeklies or city dailies. Readers have some rights as well as advertisers and printers. And a regular plan of makeup with judicious mingling of reading matter and advertisement is fair to both classes. By that I mean, several center columns of reading matter with outside columns of advertisements. Or advertisements across the bottom and solid reading matter on the upper half of the page. By tactful and sensible separation of reading and advertisements, the printer can make every page of his weekly valuable to the advertiser. The confusion, disarray and jumble poured down the columns of many weeklies is not creditable to the country press. Social notes, settings of eggs, goings away, birth records, prize potatoes, spring millinery, church sociables and market topping hogs flow down the columns without thought of fitness or connection. Floating with the mass are advertisements of 2 percent money, $1.98 coal, Tumber sells lumber. While printers are urging more advertising, they might better turn their gaze inward and make the appearance of their sheet ask for it by the look on its face.

A good postion regularly occupied becomes as much a part of the reading matter in a paper as the news columns. If the copy is changed every week the readers of the paper look to see what you will say next. It is like a continued story. Your ad becomes interesting reading if you will permit it to. The publisher securing an advertiser who will furnish good copy each week, has in effect added a reporter to his staff at no cost to himself. For this reason the publisher can well afford to make a better price and should cheerfully set the ad each week. I recall a series of ads that were printed several years ago in the Kansas City Star. They were changed every day; they were jocular in vein, fitted each day to current topics. Worded in friendly, conversational style, they were full of personality and you felt that here was a man who was in full touch with his neighbors. That a man who kept so close to his city and friends must be a good man to sell you groceries. They always got down to business. Sometimes right at the start off. They simply must have sold lots of groceries. I read them as regularly as the front page, and they were printed on the inside last page.

The retailer in the small town knows most of his customers in person. For that reason he can talk in more friendly strain. He should be the personal friend of his trade and should make them feel his friendliness in his advertisements. Do not boast about "the tremendous power of cash," "mammoth purchase of train load of wrecked goods," "your great keenness in getting a bargain." Your banker sees the check, the freight agent collects the freight, the drayman hauls the goods. If you try to fool them, you will soon be known as an unreliable advertiser. Things promised are things due. Meet fully your advertising obligations.

Use good, plain English. The kind that is short, stout and sturdy. The kind that can stand on its feet and hold up a weight. Some men are unfortunately blessed with a large vocabulary. I sometimes read in our great state dailies, letters from a man thus unhappily blessed. He can use more words to say less than any writer I have ever read. His language is correct. It is rightly applied.

His words are chosen with delicate sense for nice shades of meaning. But in studying his language you forget what he is trying to say. "Examples may be heaped until they hide the precepts they were made to render plain." To illustrate my meaning more clearly, take the old proverb I have just quoted. Boil it down to "Don't bury him under explanations." That is five words that tell it all. The old saying contained fifteen.

Many years ago, Louis Kossuth, the great Hungarian liberator, was imprisoned. During his confinement he was furnished access to a splendid English library. After his liberation, he came to America. Wherever he went he was asked to give public addresses. His good, quaint, forceful language attracted attention. Knowing he was a native Hungarian, he was asked where he learned to speak English so well. He seemed surprised. "Why," he replied, "is that not the way you speak it? I never read but two English books in my life, Shakespeare and the Bible." The splendid English library he had read consisted of those two marvelous books. He had drunk of the purest and best. He had nothing to unlearn. Read them, study them, for language and precept. From Shakespeare, "Strong reasons make strong actions," "For neither a borrower nor lender he; for loan oft loses both itself and friend," "The tartness of his face sours ripe grapes." Do you recognize this from the sermon on the mount? "But when thou doest alms, let not thy left hand know what they right hand doeth," "For where your treasure is, there will your heart be also." Listen to that mighty, little man, St. Paul, "A little leaven, leaveneth the whole lump," "If any man thinketh he hath whereof he might trust in the flesh, I more," "Prove all things, hold fast that which is good." A careful study of the Bible will not only improve your language, but modify your statements to a believable point. Rudyard Kipling, Emerson, Elbert Hubbard, all use strong English. Any book of old proverbs is full of short, simple sayings that are models of advertising brevity. "Grasp all—loose all," "Cheap is dear in the long run," "He is rich that is satisfied." Can you word these quotations that I have given and make them express as much with fewer words?

When asked how it was that he could get so close to the people, Roosevelt replied, "I am thinking just like him." If you can think just like the man who reads the ad, you will try to make it appeal to him. Space is valuable. If one dollar spent for space will sell ten dollars' worth, why spend two for the same end? If regular occupancy of small space will sell as much more, why spread yourself over more ground than you can well cover?

Put one idea before the customer. Let one idea stand out so distinctly that it makes a strong impression. The pages of most periodicals with national circulation are good text-books for the advertiser. Say something each week that will keep the reader looking for the next chapter. Many of you will remember a series some years ago of advertisements that began with a good story. Sometimes it ran for nearly a column. They were good stories, but they invariably wound up with the saving of life with a kidney cure. That was an extreme kind of advertising. But the principle was good. And the sale of this cure was tremendous as long as the stories were printed.

It is not necessary to have a large variety of stock to find a new subject each week. It would be easily possible to advertise one kind of writing paper or

burial casket until a man would not feel safe to die until he had written his will on that paper and would feel uncomfortable in any other casket. It is a mistake to shoot too many kinds of goods at the customer at one time. Even large department stores in the cities sometimes fill their space with such a lot of matter that it becomes a task to read it. With the smaller man in the country town, the simple ad that brings people to the store is the best tone to assume.

There is one quite important thing to keep in mind; the appearance of your ad. It should be set up with reference to its surroundings. On a street of white houses, the one painted a harmonizing shade of green or yellow would attract by its color. On a page of ads set up with all the type in the shop, the one in simple paragraph style would stand out distinctly. It is a good plan for each merchant to select his own style of type and use that exclusively for his ads. If the shop cannot furnish enough variety, buy your own type and border. Make your ad as characteristic as your face or your voice.

Keep an advertising book. Paste in it your own ads, dating them. As the seasons pass by, note the effect, record facts as to quality, use, source, special features, satisfaction, etc. In a year or two, you will have a valuable work of reference. Cut out such ads as appeal to you in other papers. They will be suggestive for your own use. It will not be long until you are writing good, strong copy that will bring business and assured income.

Do not overlook the psychology of advertising. The preacher who stands before his congregation cannot preach to the hearts of his hearers unless he feels what his lips utter. The teacher before his class reveals his character, though he may never give it a thought. The man who reads your ad reads your sincerity or insincerity between the lines. Time your utterances to the seasons; $2.00 skates offered at $1.98 in July would be a drug in the market. Panama hats in January would move slowly. Shamrock badges in a German settlement would be in small demand. But, when spring mellows the climate, it is opportune to sing about garden seeds, and garden tools. Early frost suggests woolen blankets, warm underwear and hard coal. Follow the line of least resistance.

Proper consideration of an advertising campaign brings some surprising conclusions. If I wish to increase my business by advertising, shall I be able to finish the sale after I have gotten the customer into my store? Will my assortment and prices appeal to him? Is the quality of my goods beyond criticism? Does my store have an attractive look? Will the tail wag the dog or the dog the tail? The finding of the proper answer to these questions has set many a merchant on the road to success. The chain of reasoning has hitched him to a dynamo and he has become a live wire, full of energy. Being absolutely honest in his publicity has compelled him to make his business fit his ads. An honest business, honestly advertised, is a worthy and serviceable part of society, whether the proprietor reaps only small annual profits or quickly acquires a competence.

DISCUSSION.

Mr. Bruce Philip, of California, led off in the discussion, and related a number of his experiences. He had tried advertising in a weekly newspaper, both by the coupon system and the advertisement of special things, but it was never satisfactory. Then he took the cue from the "story" form of advertising, and found that three or four lines of reading

matter brought results at once. He would use as a catch-word some striking event or matter prominent in the public mind at the time, such as a cloud-burst or candidacy for office, and the results had been very gratifying. Such advertising frequently made good.

Mr. Charles R. Sherman, of Omaha, thought that the question of what a catch-line should be for an advertisement was a mooted one, and he was not at all sure that a soothing-syrup advertisement should have a catch-line about a prospective Congressman or the last tornado. He had inclined of late years to the severely plain in advertising. The man who started his ads with a catch-phrase, "I cure fits" knew what he was about; his appeal was directly to the man who had fits, or to the parents or guardians of children thus affected. All they wanted to know was a remedy for fits—that was the all-absorbing question with them. Likewise, young couples who were the proud possessors of a baby two months old needed only the picture of a baby-carriage, or the headline "Baby-Carriages," to interest them, whereas such an ad would hardly appeal to an old maid, unless she was going to make a present of a baby-carriage. And so in the fall people were interested in the question of new hats; and this principle prevailed all along the line. The thing a man wanted to buy was the thing that he was interested in, the live topic with him, and all that was needed was the suggestion of having that thing for sale.

As to the question of whether a single-line drugstore could successfully compete with a department store, Mr. Sherman told of an unsuccessful effort made by a merchants' association in his city some years ago to make war on the department stores. Following Mr. Pease's advice, he had quoted Shakespeare to them, what Cassius said to his fellow conspirators:

"The fault, dear Brutus, is not in our stars,
But in ourselves, that we are underlings."

He had told one of the grocers that he had been to five stores to find Roquefort cheese, and finally thought of an ad he had seen of one of the big department stores, and went there and found it. He said he had had the "nerve" to tell these people that he did not believe a department store could run a better drugstore than he had, although they might have more money, for they were going to run it for profit; and if the man who ran the single-line store would wake up and observe the methods of the other fellow, he could make a profit, too. He was firmly convinced that the one-line store, properly managed, could do equally as well or better than the department store, with its forty lines of business to run. He admitted, of course, that one man could not afford to take up as much advertising space in the papers as a combination of forty or fifty men, and his advertising would have to be selected. The man on the outskirts of a city, for instance, could not afford to use space "where only three-fourths of the shots he fired came within range of any game."

Mr. Pease said he considered it a fundamental principle of all advertising that the purchaser should know he would get what he expected when he went to a store, and goods of the right quality—which he was sure was the case with Mr. Sherman's five large stores in Omaha. There were hundreds of phases to the advertising business, and an infinity of suggestions could be made. His paper was directed solely to newspaper publicity. But he also firmly believed in the personal-letter system, and that of enclosing slips with every package that went out, sampling, and many other methods. These varying phases might be discussed for a week, and the subject not be exhausted. He had found catch-phrases to introduce an advertisement an excellent thing, as the promise of a "story" was always attractive, and the man who could coin phrases of that sort would get quick results.

Mr. Anderson said he had been very much impressed with the value of the paper just read, and noted particularly that Mr. Pease was a man who practiced what he preached, in that he had advertised his friend "Teddy" all the way through, along with his other wares and merchandise. One point in Mr. Pease's paper which appealed to him was the suggestion that it was not necessary for the retail druggist to lay out large sums of money in acquiring a knowledge of the fundamental principles of advertising. But while newspaper advertising, circularizing and such things as that were good and often brought excellent results, it should not be forgotten that there were druggists who were not in a position to take up this work, as their business was not large enough to justify it, and the results

would not warrant the expenditure—at least they felt that way about it. "They don't take the first chance, in other words," said Mr. Anderson.

Prof. W. C. Anderson, of Brooklyn, went on to say that he heartily commended Mr. Pease's suggestions that one of the most effective ways to advertise was in the appearance of the store, the cleanliness and the service that was given. It was only natural for people to drift into a store that was well lighted and attractive inside. He thought there was no place in the world where things should be kept so thoroughly in order and present so inviting an appearance as the drugstore.

Commenting on Mr. Thompson's paper,[1] Mr. Anderson heartily commended what he had said about the personality of the druggist, his conduct in his store and how he handled it, his ability to compound prescriptions, and the like. He related an instance in New York City to show that the personality of a druggist had been so impressed upon the people in his neighborhood that a "chain-store" in that locality had been forced to close out and quit business. He knew of like instances, where druggists who had been in business in their localities for twenty-five or thirty years, and had impressed their personality upon the people of their community, and who made it a point to call attention to the long time they had been in business there, the way they had served them, the reputation that they had with the physicians who sent their prescriptions to them in preference to other places, had forced these "chain-stores" to move out. His advice to the druggist who felt that he could not branch out into newspaper advertising was to keep in mind the cleanliness of his store, accuracy of service, and to impress his personality upon his customers.

Mr. G. C. Kendall, of Meridian, Miss., in this connection related some of his experiences. He lived in a town of some 25,000 population, where there were some fourteen or fifteen drugstores doing all kinds of advertising. As was generally known, there was a number of so-called "first-class" patent medicine concerns that would offer inducements to the live druggist to sell their goods. He was advertising now as the special agent of over twenty different houses. This enabled him to cut out newspaper advertising altogether. He had been spending some $30 a month with the two daily papers in his city, and this scheme enabled him to save that. He had the agency for such patent-medicine concerns as Vinol, Rexall and Sage and Sulphur, which he regarded as the best propositions of this kind. In addition, he did run a one-inch ad in each paper, simply saying that "Every medicine advertised in this paper is for sale by Gus C. Kendall." In this way, it mattered not to him what other druggists who had special preparations might advertise over their own names. He had calls for these articles almost as much as if he were directly advertising them, all by reason of this one-inch ad.. The prescription department he left largely to other lines of advertising, such as the telephone directory, city directory, hotel cabinets, bill-boards and street cars. Mr. Kendall said that he spent pretty liberally of his profits in advertising, but in his opinion the best advertising a druggist could have in the prescription department was through the physician. He had a dozen physicians who used his prescription blanks exclusively, and it was well known that some people imagined they must go to the druggist whose name appeared on the prescription blank. Mr. Kendall went on to say how his business had grown in the last ten or twelve years, and admitted that he was more "peculiar" in his line of business than any man in his town. A marked perculiarity of his was, that he would not permit a soda fountain to come into his store. He said that he would not rent space to a soda fountain at any price, and would not run it himself under any circumstances. Also, not a pound of paint or a package of garden seed was sent out of his store. He said he believed in "shooting straight from the shoulder" in the matter of advertising, and when he advertised that his was the only *drug store* in the city of Meridian, he stated only a fact. He did not consider the soda dispenser a druggist, and neither was the man in the back room that put up paint a pharmacist—any woman or child could do that. He closed by saying that his idea of running a retail drug business was to specialize and be a druggist.

[1] See Sept., 1912, Journal, page 970.

Contributed and Selected

PHYSIOLOGICAL ACTIVITY OF ACETIC FLUIDEXTRACT OF DIGITALIS.

W. A. PEARSON, PHILADELPHIA, PA.

Recently a lot of Acetic Fluidextract of Digitalis was returned to us with the statement that "it was of unsatisfactory physiological activity." From the records I found that the preparation had been made in 1912 from digitalis leaves which I had previously tested and found to be of satisfactory physiological activity.

Five cc. of the fluidextract were diluted to 50 cc. with physiological salt solution and various amounts of this dilution injected into eight different guinea pigs with the following results:

Pig No. 1, Weight 350 gm.
Injected—1.0 cc. of dilution (0.1 cc. of acetic fluidextract).
Result—No toxic action noted.

Pig No. 2, Weight 268 gm.
Injected—1.2 cc. of dilution (0.12 cc. of acetic fluidextract).
Result—No toxic action noted.

Pig No. 3, Weight 285 gm.
Injected—1.5 cc. of dilution (0.15 cc. of acetic fluidextract).
Result—No toxic action noted.

Pig No. 4, Weight 290 gm.
Injected—2.0 cc. of dilution (0.2 cc. of acetic fluidextract).
Result—No toxic action noted.

Pig No. 5, Weight 350 gm.
Injected—1.0 cc. of dilution (0.1 cc. of acetic fluidextract).
Result—No toxic action noted.

Pig No. 6, Weight 268 gm.
Injected—1.2 cc. of dilution (0.12 cc. of acetic fluidextract).
Result—No toxic action noted.

Pig No. 7, Weight 285 gm.
Injected—1.5 cc. of dilution (0.15 cc. of acetic fluidextract.
Result—No toxic action noted.

Pig No. 8, Weight 290 gm.
Injected—2.0 cc. of dilution (0.2 cc. of acetic fluidextract).
Result—No toxic action noted.

0.1 cc. of a fluidextract of Digitalis, U. S. P. (1.0 cc. of the 1-10 dilution) should kill a 250 gm. pig within two hours after the development of typical symptoms of digitalis poisoning. As there was some question if any acetic fluidextract of Digitalis would be of corresponding physiologic activity two fluidextracts were freshly prepared from the same ground digitalis leaves. One fluidextract was

made according to the U. S. P. method, the other with acetic acid. Each of these samples were diluted to ten volumes with physiological salt solution and injected into guinea pigs, with the following results:

Pig No. 9, Weight 280 gm.
Injected—1 cc. of dilution (0.1 cc. of acetic fluidextract).
Result—No action.

Pig No. 10, Weight 309 gm.
Injected—1.5 cc. of dilution (0.15 cc. of acetic fluidextract).
Result—No action.

Pig No. 11, Weight 233 gm.
Injected—2 cc. of dilution (0.2 cc. of acetic fluidextract).
Result—No action.

Pig No. 12, Weight 275 gm.
Injected—1 cc. of dilution (0.1 cc. of Fluidextract of Digitalis, U. S. P.)
Result—Salivation but pig did not die.

Pig No. 13, Weight 305 gm.
Injected—1.5 cc. of dilution (0.15 cc. of Fluidextract of Digitalis, U. S. P., made from leaves from store.)
Result—Convulsions, but pig did not die till next morning.

Pig No. 14, Weight 325 gm.
Injected—2 cc. of dilution (0.2 cc. of Fluidextract of Digitalis, U. S. P.)
Result—Severe convulsions. Dead in 30 minutes.

It may be readily seen from the results above that the acetic fluidextract of digitalis was markedly inferior in physiological activity to the U. S. P. product made from the same leaves.

In order to determine if the acetic fluidextract had any physiological activity, calcium carbonate and magnesium carbonate were shaken with a portion of the acetic fluid and after most of the effervescence had ceased the liquid was filtered. 1 cc. of this filtrate was now injected into a guinea pig which weighed 320 gm. No convulsions were noticed. Even salivation, frequent defecation and urination were not observed. The pig died after two days, but post mortem did not show heart in firm systole or blood vessels engorged.

..Summary and Conclusion.

The physiological activity of acetic fluidextract of digitalis is undoubtedly markedly less than the fluidextract made by U. S. P. method. In all probability the glucosides are promptly broken down by the acetic acid.

LABORATORIES OF THE SMITH, KLINE AND FRENCH CO., Philadelphia, Pa.

A RECENT ADULTERANT OF MANACA.

FRED A. MILLER, INDIANAPOLIS, IND.

The supply of crude manaca on the drug markets of the United States, at the present time, consists largely of an unidentified adulterant or substitute. This form (Fig. II) has recently been noted in all samples examined in the proportions of from seventy-six to one hundred percent. It is claimed by importers

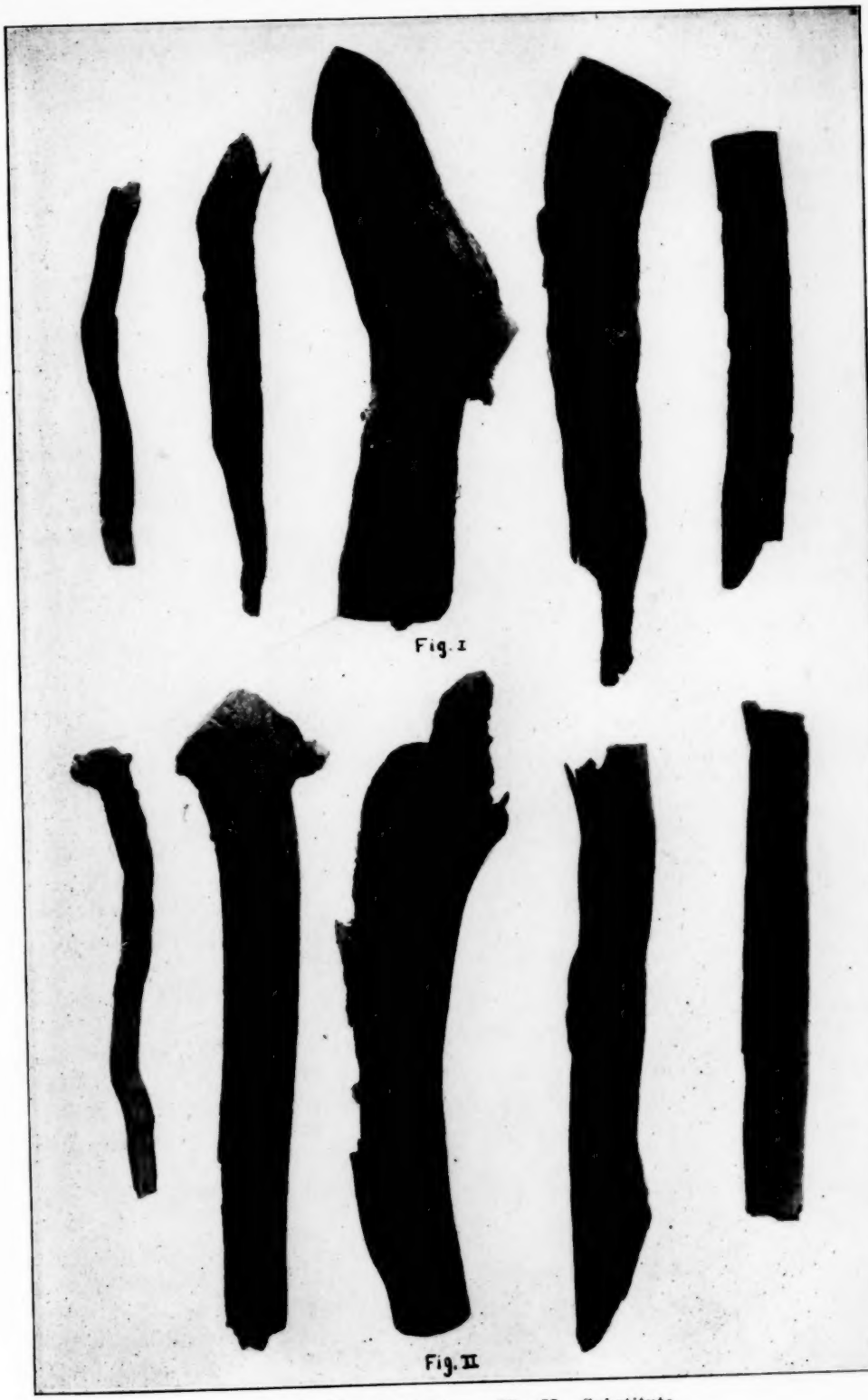

Fig. I. Manaca Root. Fig. II. Substitute.

that this substitute is genuine manaca, and that the lighter color of the root is due to a difference of soils in which the drug grows. No significance is given the structural differences which are equally as manifest as that of color. Following is a comparison of manaca with the root noted:

Manaca root (Fig. I) varies in thickness from five to thirty mm. and in length from one dm. to one meter. Externally it is dark reddish-brown. The bark is thin, usually scaly or flaky, and adheres tightly to the wood. It is distinctly bitter. The wood is tough, hard, and of a reddish-yellow color. It is only slightly bitter. The wood is porous, the pores being scarcely visible under a hand lens. The medullary rays are few in number and only visible under a hand lens.

The substitute (Fig. II) varies in thickness from seven to twenty-five mm. and in length from one to four dm. Externally it is yellowish gray. The bark is twice as thick as that of manaca, not scaly or flaky, and separates readily from the wood. It is practically tasteless. The wood is fragile, slightly softer than that of manaca, and of a pale yellow color. The wood is tasteless. It is porous, the pores being distinctly visible under a hand lens. The medullary rays are numerous, and plainly visible.

DEPARTMENT OF BOTANY, ELI LILLY & COMPANY, Indianapolis, Ind.

SANTONINLESS SANTONICA.

CHARLES H. LA WALL, PH. G., PH. M., PHILADELPHIA, PA.

A specimen of santonica was recently submitted for examination and assay which, while it corresponds closely in appearance with the official santonica in most respects, showed some abnormal characteristics, and upon further examination was found to contain not more than traces of santonin.

The appearance of the drug was very favorable as to color and freshness. It was rather greener than the santonica commonly seen, and possessed an odor slightly different from the ordinary santonica odor and strongly suggestive of tansy. The microscopic examination showed it to be more tomentose than the drug usually is, and the oil glands were of a greenish color.

The drug was assayed by several methods. The method of the British Pharmacoposia of 1888, Katz's, and Thaeter's methods, all gave a small amount of a resinous residue which showed no signs of crystallizing, even after several days' standing, while several commercial specimens of the drug, one seven years old and the other much older, which were assayed simultaneously to test the accuracy of the method, showed 4.18 and 1.71 percent of crystallized santonin respectively.

Thinking that perhaps the drug had been partially exhausted of its santonin, the ether extract in the several samples was determined, and in the sample yielding no santonin it was found to be 18.6 percent, a figure intermediate between both of the other samples examined, and therefore to be regarded as normal and as a proof of the impossibility of its having been tampered with in any way, as by being exhausted.

It was found possible to apply one of the color tests of santonin directly to the drug with very satisfactory results as indicating the comparative santonin content and the consequent activity of the drug. This test is based on that of Pain (Pharm. J., 1901, 67,131), and is as follows:

Place 0.5 gm. of santonica (whole or ground) in a test tube, add 5 cc. of spirit of nitrous ether and boil gently. No color should be developed or not more than a slight greenish yellow color due to the solvent action of the alcohol on the resins of the drug. Now add 10 drops of alcoholic potassium hydroxide solution and again boil. In an active drug a rose red color is developed in direct proportion to the amount of santonin present. In the sample under question, scarcely any color was noticeable at all, while the other samples gave results agreeing proportionately with the amount of santonin found by assaying.

The foregoing condition of a practically worthless drug with a fine physical appearance is not new, for it has long been known that physical appearance is not always a criterion of value. It is new, however, as regards santonica, which is usually judged on physical appearance only, and it is suggested that in the future purchasers of santonica apply the color test as being much simpler than the long and tedious process of assaying by any of the available methods. They would thus be enabled to reject a worthless drug in a few minutes. The assay can be applied later to such samples as show positive results by the color test. In this connection I would commend Thaeter's method (Archiv. der Pharmacie, Vol. 237, p. 626, and Vol. 238, p. 383), as the most satisfactory.

LIQUOR FERRI IODIDI.

GEORGE M. BERINGER, A. M., PH. M., CAMDEN, N. J.

The use of the Solution of Iron Iodide for the extemporaneous preparation of the syrup is undoubtedly increasing. The dispensing doctors and the druggists who are either "too busy" or "too lazy" to make syrup of iron iodide by the official process have willingly relegated to the manufacturer the preparation of the concentrated solution of ferrous iodide, and have thus curtailed their own practice of the art of pharmacy to the simple admixture of such a concentrated solution with syrup.

As long ago as 1888 this custom was sufficiently in vogue to be recognized by the National Formulary, and, in the first issue of that work in that year, a formula for Liquor Ferri Iodidi was included. The note accompanying that formula stated: "On mixing 1 volume of this solution of iodide of iron with 5 volumes of syrup, the product will contain about 60 grains of iodide of iron (ferrous) in each fluidounce, and will be practically, measure for measure, but not weight for weight, identical with the official syrup of iodide of iron."

It will be thus seen that the extemporaneous preparation of syrup of ferrous iodide in this way had, even at that time, the endorsement of a quasi legal authority.

In the third edition of the N. F., published in 1908, the formula has been retained. In the earlier copies of this edition the foot-note stated, "This solution

contains about *85* percent of ferrous iodide. On mixing 1 volume with *15* volumes of syrup (U. S. P.), the product will be practically identical with syrup of ferrous iodide (U. S. P.)" Subsequently, this wording was changed and in the later copies the note reads, "This solution contains about *81* percent of ferrous iodide. On mixing 1 volume with *11 volumes* of syrup (U. S. P.), the product will be practically identical with syrup of ferrous iodide (U. S. P.)"

As a matter of fact, both of these statements are incorrect. The N. F. III formula is directed to yield 1000 cc. of product; if this be changed and the finished product made 1000 gm., then the solution will contain 81 percent of ferrous iodide.

The manufacturers have quite generally adopted for the solution of ferrous iodide a strength of sixteen times by volume that of the official syrup of iodide. That is, their labels direct that to prepare syrup iron iodide, 1 fluidounce of the liquor be mixed with 15 fluidounces of syrup. This is only another evidence that the American physicians, druggists and manufacturers persist in using the apothecaries' measure and think in its terms rather than in the decimal terms of the metric measure. The intent of the National Formulary evidently was to supply a formula for a preparation of the same strength as supplied in the trade.

Several other minor defects in the N. F. formula should be considered. The direction to filter the *boiling solution* of ferrous iodide through paper is a manipulative error that brings trouble. In my experience, hot solutions of ferrous iodide of the strength directed invariably eat right through paper filters, even if of several thicknesses. Either the solution has to be diluted greatly or cooled before filtering through paper, or else the hot solution must be filtered through glass wool or asbestos wool, returning the first portion of the filtrate until it comes through clear.

The amount of hypophosphorous acid directed to be used in the formula is not the equivalent of that directed as a preservative in the official formula for the syrup. Consequently, the solution is prone to undergo change if kept in bottles that are opened frequently, as is apt to be the case. Hence, the solution should be preserved in small glass stoppered bottles, which should be completely filled and kept tightly stoppered.

The proposition has now been made that the U. S. P. IX should direct that syrup of ferrous iodide be prepared from a concentrated liquor, and, consequently, a formula for a concentrated solution of ferrous iodide will have to be adopted as a new admission in the Pharmacopoeia. Our concern is, that the most satisfactory formula be adopted.

The value of glycerin as a preservative for solutions of iron salts has long been recognized by the practical pharmacists and the manufacturers of the various solutions of ferrous salts. As early as 1857, J. C. Leaming (Proceedings, A. Ph. A.), proposed the use of glycerin as a preservative for solution of ferrous iodide, and in the year following, Henry Thayer (American Journal of Pharmacy, 1858, page 390), proposed that the ferrous iodide should be prepared or formed in the presence of glycerin. At the semi-centennial celebration of the A. Ph. A. in 1902, there was on exhibition a sample of glycerole of ferrous iodide made by Prof. William Procter, Jr., January 15, 1865, and although at that time more than thirty-seven years old, it was in an excellent state of preservation.

It is to be remembered that the title liquor ferri iodidi in those early days was applied to an entirely different preparation from what we are now designating under the same title. The solutions of that period were much weaker and were commonly preserved with glycerin, honey or sugar, and these preceded and were displaced by the formula for syrup of ferrous iodide, which was subsequently made official. The value of glycerin as a preservative for ferrous salts, and likewise of iodide solutions, is now fully recognized. Its use is proposed in the pharmacopoeial formulas for diluted hydriodic acid and for the syrup of hydriodic acid, and likewise in a number of the N. F. formulas for elixir containing iron salts. I have found it of value as a preservative in iron iodide solutions and in the formula submitted herewith, it is used along with hypophosphorous acid in proper amount to render the solution permanent. In this concentrated solution of iron iodide the glycerin serves another useful purpose, namely, it prevents the crystallizing out of the salt, thus assuring solution.

The following formula is submitted for a concentrated solution of iron iodide of such a strength that one volume diluted with fifteen volumes of syrup will produce a syrup of ferrous iodide practically identical in strength with the syrup of ferrous iodide now official. The strength of 1 in 16 has been retained, because of its present extensive use and likewise to maintain the legal standard of much of the solution of iron iodide that is already in commerce.

LIQUOR FERRI IODIDI.

Solution of Ferrous Iodide.

An aqueous solution containing 107.8 Gm. of Ferrous Iodide (Fe. I_2=309.69) in each 100 Cc.

Iron, in the form of fine, bright wire, cut into small pieces	250 Gm.
Iodine	884 Gm.
Hypophosphorous Acid (50%)	85 Cc.
(if 30% acid be used) then use	140 Cc.
Glycerin	100 Cc.
Distilled Water, a sufficient quantity	
To make one thousand cubic centimeters	1000 Cc.

To the iron, contained in a flat-bottomed flask, add 1000 cc. of distilled water, then gradually add the iodine, keeping the temperature down by setting the flask in a vessel of cold water. When the iodine has all been added, allow the mixture to stand for 12 hours, then heat to boiling until the clear liquid is of a bright green color. Then *cool* the solution and filter through a double filter paper and wash the flask and iron residue with several portions of distilled water and pass the washings through the filter. Add the glycerin to the filtered solution and rapidly evaporate in a porcelain dish on a sand bath to about 850 cc. Allow the solution to cool to 90° C., then add the hypophosphorous acid; mix thoroughly and when cool add sufficient distilled water to make 1000 cc.

The finished prduct should be kept in small glass-stoppered bottles entirely filled. It is an emerald green liquid, specific gravity about 1.9 (actual determination of product gave 1.906).

Syrup of ferrous iodide made by diluting 1 volume of this liquid with 15 volumes of syrup (U. S. P.), showed a specific gravity of 1.35, thus practically tallying with the U. S. P. statement for specific gravity of the syrup of iron iodide, and maintaining it of the International Standard of 5 percent of ferrous iodide.

In the above formula, the hypophosphorous acid is advisedly directed to be

added to the concentrated iodide solution after it has been allowed to cool to 90° C. If it is added to the iron iodide solution before concentration, the hypophosphorous acid is more or less decomposed. The Pharmacopoeia states that hypophosphorous acid begins to decompose between 130-140° C. The decomposition appears to commence below this temperature and in experiments where it was added to the solution before evaporation, the decomposition was quite marked. If the manipulation be changed and the hypophosphorous acid added before concentration, then the evaporation must be done on a water-bath.

A LABEL VARNISH SUBSTITUTE.

C. B. BURNSIDE, IOWA CITY, IOWA.

The ordinary label varnish is quite unsatisfactory in appearance and application. Labels may be made water and acid proof by the application of a saturated solution of solid white paraffin in petroleum ether of boiling point from 40 to 50 degrees Centigrade. The process consists in simply touching the label with a small piece of cottain saturated with the solution. The petroleum ether evaporates almost instantly, leaving an invisible coating of paraffin which retains the new lustre of the label as well as making it water and acid proof.

INFLUENCE OF CLIMATE ON VARIOUS CHEMICALS.

SAMUEL T. HENSEL, PH. G., DENVER, COLORADO.

A knowledge of the chemical and physical properties of the various compounds of the materia medica constitutes a prerequisite of qualification of the professional pharmacist. To this must be supplemented an adequate knowledge of the best methods to be employed for their preservation, and as a rule, the educated pharmacist becomes very skillful as the years pass and his experience is extended.

The manufacturing chemist, however, occupies a somewhat different position in that, no matter with what scrupulous care his products are made, they are distributed over a wide domain, and are subjected to variations of climate which

affect more or less their stability, and as frequently happens, in deference to his judgment, the container is apt to be accepted by the purchaser, as the one best adapted to the preservation of its contents.

The knowledge and technical skill of the chemist is profound. He must be a mathematician, a skillful physicist, and be possessed of an extensive knowledge of chemical compounds, and yet, in spite of this acknowledged ability, there sometimes appear seeming incongruities.

The chief of these is the character of the container which he employs for the transportation of his products. These are frequently of doubtful sufficiency, in view of the wide range of climate conditions which prevail within the borders of the United States alone, to say nothing of its territories and the foreign countries which may be their destination.

The writer recently expressed himself to this effect to a prominent manufacturing chemist, and was informed by him that the container was very often a matter of selection upon the part of the buyer, and supported his statement by exhibiting a list of chemicals, some of which were very expensive, and all of them susceptible of change upon exposure. These, he further stated, were ordered to be packed in paper cartons, and that he was compelled to comply with this commercial requirement, or lose the business.

Of course, there is involved in this both a moral responsibility to the public, and a professional pride, which we will not discuss.

That he had a knowledge of the possible influence of climate, goes without saying. That he had an adequate conception of the magnitude of those influences as manifested within the area of our own country alone, is doubtful.

The object of this paper, however, is not to discuss the container nor the responsibility of the manufacturer for his products after they are shipped, but rather to call attention to conditions which exist, and which are constantly affecting the stability of many substances destined for medicinal use, thereby causing them to *no longer respond to the requirements of the Purity Rubric of the United States Pharmacopoeia*—and further, to suggest the establishment of a systematic research, which shall have for its object the investigation of the prevailing climatic conditions in given areas, and their influence upon various chemical compounds.

Such a research could not be conducted properly by a single individual, but would require the cooperation of a number of men distributed over a wide territory, working simultaneously, with the same compounds, and using the same physical measurements.

It need not be expensive, nor take a great length of time. The data collected and finally tabulated, would be of interest and serve as a guide to the pharmacist, and be of economic value to the manufacturer and jobber.

Chemicals Affected. The limits of this paper will not permit of the enumeration of a great number of chemicals, and we shall therefore confine ourselves to the consideration of a few which may be regarded as typical—later on we shall specify the chief physical or rather meteorological influences which are constantly at work in effecting their undoing.

The chemist who has resided at sea level all his life, whose experiences have been exclusively along the coast states, and accustomed to making his observations

in an atmosphere almost constantly at the point of saturation, with respect to atmospheric moisture, has but a vague idea of the conditions which his products are destined to encounter.

In the case of polyhydrated salts, or those which contain a large number of molecules of water of crystallization, he knows by theory, that they are susceptible of efflorescence, but as to the magnitude of the possible loss in weight of water, he has absolutely no definite knowledge.

Owing to the vast extent of the area of the United States, chemicals are variously affected in widely separated sections, and consequently the physical properties described by the manufacturer do not permanently or uniformly apply.

Strontium bromide is sometimes described by eastern chemists as a very deliquescent salt, while here in Denver, the Rocky Mountain region, and upon the arid plains as far east as the Missouri River, it is practically a permanent crystalline body.

Along the sea board, chloral hydrate is difficult to dispense, and moisture is so rapidly absorbed as to wet the paper while in the act of weighing. At Denver we have no such experience, and it may be of interest to the reader to know that the writer has dispensed this salt in powdered form enclosed in ordinary powder paper.

To open a bottle of zinc chloride along the coast and expose its contents but for a few minutes, is equivalent to reducing the salt to the liquid state. At Denver the bottle may be repeatedly opened and the contents will retain their granular structure for a long time.

The isometric salts, magnesium sulphate and zinc sulphate, both containing 7 molecules of water of crystallization, lose their beautiful prismatic structure, and ultimately fall to an amorphous powder, in this section of the country. Copper sulphate, sodium carbonate and sodium borate are all similarly affected here. My recollection of the far East is that, with the exception of soduim carbonate, these salts were never seen in any other condition than their normal geometric triclinic and monoclinic forms.

Among the volatile salts, ammonium carbonate requires special care in all parts of the country, in order to avoid the loss of its basic gaseous content, and the consequent change in its chemical nature.

At this point, Denver, sodium phosphate will lose 5 molecules of its water of crystallization or 25 percent; sodium carbonate, containing 10 molecules, will lose 5 molecules or 31 percent of their molecular weights.

It must be understood that we are speaking of chemicals destined for chemical and medicinal use, and not the heavy drugs intended for industrial purposes. A chemist would have no difficulty in taking any of the substances named, which had been subjected to the changes spoken of, and to make his solutions by the methods of standardization employed in such cases.

The pharmacist and druggist, on the other hand, is called upon to furnish substances conforming to the Purity Rubric of the United States Pharmacopœia, and must therefore depend implicitly upon his manufacturer.

A normal volumetric solution whose saline content includes a basic element which is the chemical equivalent of one, two or three replaceable hydrogen atoms

of an acid, could not be prepared by taking the molecular, or the fractional molecular weight of a salt that had lost from 20 to 30 percent of its water of crystallization. It is for this reason that the Purity Rubric of the U. S. P. directs "carefully selected crystals showing no trace of efflorescence or adhering moisture."

We now come to the consideration of the influences which are at work; they are few but potent.

Temperature. Latitude plays an important part in governing the temperature of a restricted territory, but it will be noticed that the isothermal lines delineated upon the maps issued by the United States Weather Bureau vary greatly from day to day, owing to atmospheric disturbances which sometimes cover a wide area.

Atmospheric Pressure. Barometric depression varies but slightly and within narrow limits at any given point; it is nevertheless powerful in its effects.

At sea level the barometer stands at about 30 inches or 760 mm. When you reach the Missouri River traveling west and arrive at the great American plains, there is a gradual increment of altitude as you approach the Rocky Mountain region, which is accompanied by a decrease in pressure amounting approximately to one inch of barometric depression for every 900 feet of elevation.

For example, the difference between the altitudes of Kansas City and the city of Denver is about 5000 feet. The barometric depression would, therefore, be about 5.5 inches, making the barometric depression at Denver 24.5 inches.

The difference between Kansas City and Leadville, Colo., is 10,000 feet, or nearly two miles in elevation, making the barometric depression at the latter point about 18.7 inches.

The difference of elevation between Kansas City and the summit of Pike's Peak is about 14,000 feet or a barometric depression of about 14.5 inches.

The physical effect of this partial pressure is to decrease the boiling point of water, and consequently to *increase* the rapidity of evaporation, especially in the absence of atmospheric moisture, a condition which is almost constant at Denver and vicinity. This tendency to evaporation is the chief cause of the instability of efflorescent salts to which we have referred.

Atmospheric Moisture or Vapor Tension. This varies from 0 to 100 percent.

The atmosphere is said to be saturated when it contains 100 percent of aqueous vapor, and if there be a decrease in temperature, will be manifested by precipitation either in the form of dew, rain, hail or snow. An atmosphere laden with moisture is favorable to the stability of efflorescent salts, while the reverse is true with respect to deliquescent salts.

Temperature, pressure and atmospheric moisture are the chief influences; the remaining two, electrical potential of the air, and gaseous content, need not be further considered, except with respect to the numerical value which they take as factors in the possible combinations of meteorological conditions, which we will now endeavor to show.

Magnitude of Meteorological Influences. There are eight influences which constitute the fundamental data of meteorological science, five only of these are available in the matter under discussion as affecting chemical compounds; these we have already named.

Our problem is therefore resolved into the question: How many combinations

of these influences are possible to exist at any moment of time within the area of the United States?

Here n=8; r=3; then, n—r+1=4.

Employing the general formula for combination,

$$\frac{n\,(n-1)\,(n-2)\,\ldots\ldots\,(n-r+1)}{\lfloor r};$$

Or $$\frac{8\times7\times6\times5\times4}{1\times2\times3\times4\times5}=56 \text{ possible combinations.}$$

And if the variations of temperature from 10 degrees Fahr., and atmospheric moisture from 0 to 100 percent, were extended through the twenty-four hours of the day, and included in our calculation, the number of permutations and combinations would reach an inconceivable number.

While there may be no perceptible change effected by these minute variations, their influences are nevertheless constantly at work, seeking to break down the molecular structure of chemical compounds.

Heat, for example, is most effective in releasing the gaseous NH_3 and CO_2 from Ammonium Carbonate, causing that compound to lose its characteristic translucent appearance and take on that of an opaque body, changed in its chemical constitution from a carbonate to a bicarbonate.

What has been written in the preceding pages contains the elements of an important research—its magnitude precludes the possibility of individual achievement, and its successful accomplishment will depend upon the cooperation of a number of qualified men, willing to work.

ON CRYSTALLINE KOMBE'-STROPHANTHIN.

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Commercial Strophanthus Kombe seed has frequently been found to contain seeds of different Strophanthus species. Mr. E. M. Holmes, F. L. S., the curator of the museum of the Pharmaceutical Society of London observes,[1] "The Strophanthus leaves on the table were presented to the society's Herbarium some months ago by Mr. Lindsay, the curator of the Edinburgh Botanical Garden. They had been grown from some of the seed, used by Professor Fraser, apparently the greenish brown kind. These leaves differed considerably from those specimens of Strophantus Kombe in the Kew Herbarium, so that it appeared, they were derived from a hairy leaved species, resembling Strophanthus hispidus, but not identical with it."

Twenty-two Kg. Strophanthus Kombe fruit (seed in pods) in very good condition were identified by Mr. Holmes of London as true Strophanthus Kombe Oliv. seeds. This statement is of great value, as there are more than twenty-nine

[1]The Pharmaceutical Journal and Trans., 1887, 17, p. 754 and p. 755, also 1889, 20, p. 335.

species of Strophanthus.[2]. The chemistry of Strophanthus seed Kombe and in particular that of strophanthin is in an uncertain state due possibly to the fact that the strophanthin under examination was prepared from seeds other than the Kombe species, but generally to other causes, as will be shown. Commercial strophanthins vary considerably in their chemical reaction as well as their physiological activity.

To clear up these uncertainties and to determine whether a strophanthin of constant chemical, physical and physiological properties can be prepared, is the object of the experiments described in this paper. It includes also a summary of the most interesting work done on strophanthin and the methods for its preparation used by the different investigators with an account of the origin and characteristics of the seed used. A complete list of the chemical literature on Kombe-strophanthin (including gratus-strophanthin or ouabain[3] and hispidus strophanthin) is given at the end of the communication.

Fraser[4] was the first investigator to obtain an active principle which he called strophanthin from Strophanthus seed.

Some of the seeds, which Fraser used, were of a species resembling Strophanthus hispidus, but not identical with it.

Fraser's method for obtaining strophanthin was changed several times. The first process on which he based the second one is not accurately reported, as pointed out by Gerrard[5]. The first process seems to have been an extraction with alcohol, and a precipitation of the active principle with ether. The second process is as follows: The ether precipitate obtained in the earlier process is dissolved in water, tannic acid is added and then digested with recently precipitated oxide of lead. The digested material is extracted with alcohol and the solution precipitated by ether. The precipitate is finally dissolved in weak alcohol and through this solution carbon dioxide is passed for *several hours,* by which means the lead is completely removed. After filtration, the solution is evaporated at a low temperature and dried in vacuo over sulphuric acid.

The third process is the following: The powdered seeds were extracted with sulfuric ether, afterwards with 20 times their weight of rectified spirit. The spirit was distilled off. The active principle was precipitated by a solution of tannin from a strong solution of the extract in water; the well washed tannate was thoroughly mixed with recently precipitated, carefully washed and moist

[2]Holmes, The Pharmac. Journal and Trans., 1893, 23, p. 868 and p. 927.
Hartwich, Archiv. der Pharm., 1892, 230, p. 401.

[3]The following is a quotation from a publication of Hatcher and Bailey: "The clinical use of Strophanthus" in the Journal of the American Medical Association (Vol. 55, 1910, p. 1698): "Even such closely related bodies as strophanthin and crystalline ouabain, strophanthin being methyl-ouabain, show different ratios of activity by subcutaneous and intravenous injections into the cat—." Because Strophanthin of the Pharmacopoeia of the U. S. is Kombe strophanthin, we are sure that the strophanthin Hatcher and Bailey refer to, must be Kombe-strophanthin. But then their statement cannot be true. As far as our knowledge goes about ouabain (or gratus strophanthin) this body has the formula $C_{30}H_{46}O_{12}+9H_2O$, and it is hydrolized according to the equation:

$$C_{30}H_{46}O_{12}+H_2O=C_6H_{12}O_5+C_{24}H_{36}O_8.$$

$C_6H_{12}O_5$ being rhamnose anhydride (Arnaud, Comptes rendus 126 (1898), p. 1208). By the work of Feist, which is confirmed in this work, we know that Kombe-strophanthin is hydrolized to strophanthidin of the formula $C_{27}H_{38}O_7$. Without saying more about the properties of the cleavage product of ouabain (or gratus-strophanthidin) it will be clear that the statement that "Kombe strophaanthin is methyl-ouabain," which is to be found in literature (Arnaud, Comptes rendus 107, 1888, p. 179, also Kohn and Kulisch Monatshefte 19, 1898, S. 385), cannot be true.

[4]The Pharmaceutical Jour. and Trans., 1873, 3, p. 523, 1887, 18, p. 69, 1889, 20, p. 206 and p. 328.

[5]The Pharmac. Jour. and Trans., 1887, 17, p. 923.

oxide of lead, which was added in a quantity calculated to be necessary for the conversion of the tannin into tannate of lead; the mixture was digested for several days at a low temperature, and after it had been dried, it was thoroughly exhausted with alcohol. The alcoholic solution was generally evaporated to a syrupy consistence and repeatedly treated with oxide of lead until every trace of tannin had been removed. The product was now dissolved in dilute alcohol and any sediment removed by filtration, and through the clear and usually almost colorless solution a gentle stream of well-washed carbonic acid was passed *for two or three days*[6] in order to remove traces of lead. The solution was then evaporated to dryness, and the residue dissolved in alcohol and filtered. Ether was added to the filtrate to precipitate the active principle. The precipitate was dissolved in absolute alcohol, which usually left a further slight sediment and the clear alcoholic solution was finally dried by being placed in a partial vacuum over sulphuric acid. Strophanthin thus obtained is a colorless opaque and brittle substance, which, under the microscope is found to consist of minute irregular crystalline plates. Strophanthin is intensely bitter and in solution in water or alcohol *is acid in reaction.* It melts at a temperature of (343° F.) 173° C. It burns without leaving a residue and contains no nitrogen. Strophanthin is decomposed by dilute acids yielding crystalline strophanthidin, and a syrup, (acc. to Fraser glucose), which reduces Fehling's solution. The results of the combustion and its reaction with H_2SO_4 will be given later in the table.

Arnaud. The communication of *Arnaud*[7] is short yet interesting for our purpose; (a translation of the chemical part is as follows): The Strophanthus Kombe seeds in very good condition were furnished by Thomas Christy of London. The following is the method of preparation. The seeds pulverized in the mill are extracted, using a reflux condenser with boiling 70% alcohol. After boiling some hours, the extraction is completed in a percolator. The alcoholic fluids are distilled on the waterbath to remove most of the alcohol, the distillation being finished in vacuo, leaving a certain amount of fluid. The oil floating on the top of the cooled extract is separated and the remaining fluid filtered. A small amount of a mixture of subacetate of lead and finely-powdered litharge is added, heated on the waterbath and filtered after cooling. The lead in solution is eliminated by hydrogensulphide and the clear fluid is concentrated at 50° to a thin extract. In twenty-four hours strophanthin will crystallize out. The crystals are filtered off, keeping the temperature at 50°. If the fluid is not too concentrated, the syrup can be separated by filtering and by placing the crystals on unglazed porcelain. The crystals can be purified by recrystallizing several times from *boiling water.*

The yield of crystallized Kombe-strophanthin is 4.5 gm. from 1 Kg. of seed, but a part of the strophanthin is kept in solution in the syrup. It is perhaps possible to recover this strophanthin by making the tannate.

Properties. Strophanthin is a white substance, very bitter, crystallizes in brilliant crystals grouped around a center of micaceous appearance, resembling cadmium iodide especially when suspended in water. These crystals are very porous

[6]Compare the preceding process.

[7]Comptes rendus, 1888, 107, p. 179.

and hold the water back easily. Strophanthin[8] forms a hydrate, which melts below 100° and loses its water in vacuum. By trying to recrystallize it, we find that the substance has become uncrystallizable, but if the substance is completely dehydrated in vacuo, it can be heated to 110° without alteration.

Strophanthin gives no residue when burned in the air. It has no sharp melting point, but softens at 165°, losing its opaqueness and quickly becoming brown. It acts on polarized light in watery solution (concentration 2.3%); $(\alpha)D=+30°$.

Cold water dissolves strophanthin slightly, 1 part to 43 parts of water 18° C. It is readily soluble in alcohol. It separates out of alcohol as a resin. It is insoluble in sulphuric ether, carbon disulphide and petroleum ether. Tannic acid precipitates it out of water solution. Strophanthin does not contain nitrogen. (The results of the combustion will be given in the table.)

Leopold Kohn and *Victor Kulisch*[9]. The seeds used by these authors to prepare strophanthin were examined by Hartwich, who declared the seeds to be identical with, or at least closely resembling the seeds used to prepare the strophanthin with which Feist made his experiments and which were said to be Kombe seed.

The strophanthin of Kohn and Kulisch was compared with the strophanthin of Merck, which was prepared from hispidus seed. The preparations were found to be identical.

The method of preparation of Kohn and Kulisch is the same as that of Arnaud. The seeds were freed from comose hair and pounded, extracted in a Soxhlet apparatus with petroleum ether to remove the fatty oil, afterwards dried and is washed until the acid reaction disappears and is recrystallized several times then extracted with 70% alcohol. The filtered alcoholic extracts were precipitated with basic lead acetate and lead hydroxide and filtered. The filtrate was treated with hydrogen sulphide and filtered again. From the filtrate concentrated in vacuo the strophanthin separates out. Recrystallization from water proved to be the best method for purifying the product.

Properties. Under the microscope the preparation shows crystalline structure. It is white, of neutral reaction and does not contain nitrogen. It does not reduce Fehling's solution in the cold or by heating and is optically inactive or slightly levorotatory. Strophanthin is very hygroscopic. The water is hard to remove from strophanthin, which melts at 100° C. It is not easy to determine the melting point of strophanthin, the mean of several estimations for the carefully dried strophanthin is 179° C. (The results of combustion, other estimations and adopted formula of strophanthin will be compared later on in a table.)

When strophanthin is boiled with diluted acids a new insoluble crystalline body *strophanthidin* is formed and the filtrate reduces Fehling's solution.

Melting point, etc. (see table). The method of preparation of strophanthidin is as follows: 10 gm. strophanthin were dissolved in 200 cc. water and heated with 20 cc. HCl of spec. grav. 1.12 in a large flask with reflux condenser. When the fluid starts to boil the impure strophanthidin separates in fine yellow flakes. After heating fifteen minutes the fluid is cooled and filtered. The strophanthidin

[8]The following is interesting as will be shown afterwards.

[9]Berichte 31, p. 514, and Monatshefte f. chemie, 19, p. 385.

from hot alcohol. The final product appears in the form of fine white silky needles. Strophanthidin cannot be dried at 100°, as it is decomposed at this temperature.

Kohn and Kulisch also prepared strophanthidin by the method which Hardy and Gallois[10] used to prepare their "Strophanthin." The seeds were extracted with hydrochloric acid containing alcohol (1 part HCl in 10 parts alcohol). The filtered extract was diluted with water and evaporated until strophanthidin separated out. The filtered, well-washed sediment was recrystallized three times out of alcohol and gave pure white silky crystals, which proved to be identical with strophanthidin, prepared from strophanthin.

Feist[11] did not prepare strophanthin himself. The strophanthin used by Feist for his investigations was prepared by Boehringer and Sons (Waldhof) from Kombe Strophanthus seed by Fraser's process,[12] also a preparation of Schuchardt out of hispidus seed was found to be identical with the former preparation.

Properties. Strophanthin forms a fine white powder with a crystalline structure, or a brittle mass when obtained by evaporating a watery solution. It does not contain nitrogen and does not reduce Fehling's solution in the cold or by heating. It contains water in varying amounts. One cannot say whether the water is that of absorption or of crystallization. Feist gives the result of only one estimation: dried at 110° 7.48% H_2O. For the results of combustion and other data, see table.

Strophanthin was hydrolized with five times its weight of half percent hydrochloric acid. The flask was placed in a cold waterbath, and slowly heated. At 30° it was all dissolved and at 70-75° strophanthidin separated in small needles. After having kept the fluid some time at 75-80° it was cooled and filtered. The strophanthidin washed with a little sulphuric ether forms a white crystalline powder. The filtrate from the strophanthidin heated again at 75-80° separates out only a very small amount of the same product. Boiling the fluid gives very poor results, because resins are formed. Strophanthidin contains two molecules of water of crystallization. By drying only one and one-half molecules can be driven off.

The water-free strophanthidin was prepared by recrystallizing several times from methylalcohol. A crystalline substance was thus obtained, consisting of one molecule strophanthidin and one molecule of methylalcohol. By drying this substance at 100° water-free strophanthidin was obtained. Strophanthidin hydrate melts at 169-170°, foaming at 176°, solidifying by cooling and melting again at 232°. The hydrate was examined optically and the crystals measured by Riva. The crystals are found to be monoclinic hemimorph. (See table).

By studying the action of alkalies on strophanthidin Feist determined that strophanthidin is a dilacton $OHC_{25}H_{37}O_2\begin{matrix}\diagup CO—O \diagdown \\ \diagdown CO—O \diagup\end{matrix}$. By the action of alkali on strophanthidin a salt of a dibasic acid is formed. By acidulating the solution of this salt and boiling, the original dilacton is not formed again, but *another lacton*, therefore, at least one OH is also present.

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[10]Journal de Pharm., 1877, 25, p. 177, nearly the same in Comptes rendus 84, p. 261.

[11]Berichte 31, p. 534, 33, p. 2063 and p. 2069 and p. 2091.

[12]See the preceding abstract concerning the examination of the seed by Prof. Hartwich.

The second cleavage of strophanthin, *strophantobiose methyl-ether,* was separated from the filtrate of strophanthidin. The combustion and the molecular weight estimation lead to the formula $C_{13}H_{24}O_{10}$. Strophantobiose-methylether was hydrolized by 1% sulphuric acid. In the fluid, resulting from this reaction, mannose was identified by the hydrazon and the osazon; rhamnose by the p-nitrophenyl rhamnosazon and by distilling the strophantobiosid with 30% sulphuric acid under which circumstances methylfurfurol is formed. Methylalcohol was identified by making a methoxyl estimation in strophantobiose-methylether. We are surprised that with the skill of Feist, the rhamnose was not obtained as a crystalline substance, as rhamnose crystallizes readily.

Heffter and Sachs[13]. Our investigations on the active principles of Kombe Strophanthus seed were already practically finished when the work of Heffter and Sachs appeared. Fortunately the publication of this paper was postponed so that we are able to incorporate the data of Heffter and Sachs. Their work is of especial importance to us as they studied the active principles of identified hispidus seed and unidentified Kombe seed, whereas we studied the active principles of identified Kombe seed and unidentified hispidus seed. The concordant results indicate that hispidus and Kombe seed, which are on the market are pure or that if they contain other species, these species do not contain other active principles.

Heffter and Sachs used for the preparation of strophanthin the method of Thoms (Berichte 31, p. 271). The fat free powdered identified Strophanthus Hispidus seeds were exhausted with hot 94% alcohol. The alcohol was distilled off and the residue taken up with hot water. To the slightly acid, colored, turbid solution lead acetate in excess was added. Hydrogensulphide was passed through the filtrate in order to remove the lead, calcium carbonate in excess was added to the clear and nearly colorless acid solution and evaporated on the waterbath to a thin syrup and filtered. The strophanthin was at last salted out by a large amount of ammonium sulphate, and the strophanthin obtained was further purified by repeated extraction with 94% alcohol and at last by precipitating from the absolute alcoholic solution with ether. In this way a yield of about 1.7% pure amorphous hispidus strophanthin was obtained. Kombe Strophanthus seed obtained in the open market gave 0.4-0.5% of crystalline Kombe strophanthin (which separated by evaporating the solution with calcium carbonate) and gave further an amorphous strophanthin, which was found to be apparently identical with amorphous hispidus strophanthin.

The figures of the analyses of these strophanthins obtained by Heffter and Sachs are compared in the table.

It is worth noting that Heffter and Sachs, using the modified method of Fromme (Hager's Handbuch der pharmac. Praxis Ergaenz band S. 669, 1908), for the quantitative strophanthidin determination, obtained values higher than ours, and probably nearer the theoretical.

OUR OWN RESEARCH.

Twenty-two Kg. Strophanthus Kombe seed in pods[14] gave 8.2 Kgs. seed (37.3%), 8.1 Kg. pods (36.8%), and 4.7 Kg. comose hair[15]. Helbing[16] who

[13]Biochemische Zeitschrift 40 (1912), p. 83.

separated five pods gives the average; seeds, 37.36% pods, 37.61%—hairs, 25.02%. The 8.1 Kgs. seed were ground to a coarse powder[17] and extracted in a percolator with petroleum ether, to remove the fat. The yield was 5.6 Kg. fat free powder and 2.5 Kg. green fatty oil (30.9%). Fraser[18] found 31.8% petroleum ether extract; 1.5 Kg. seed were twice percolated with 12 liters of 70% alcohol each time.[19] The alcohol of the first percolation was distilled off in vacuo. The thin extract, after standing a few days deposited *crystals* of *strophanthin* which were suctioned off on a hardened filter. These crystals were recrystallized several times by dissolving in as little boiling water as possible and evaporating the solution at about 40°. By constant stirring at this temperature fine crystals were obtained, but the yield of crystalline strophanthin becomes smaller by every recrystallization., e. g., 5 gm. pure crystalline strophanthin was recrystallized in this way and gave only 2 gm. crystalline strophanthin and 3 gm. of a white amorphous substance. The amorphous substance is more readily soluble in water than the crystalline strophanthin.

While the crystalline strophanthin is *neutral,* the amorphous substance is in an aqueous solution *acid* in reaction. As will be shown later the estimation of the water of crystallization and the combustion of the crystalline strophanthin give figures, which agree with the calculated figures for the formula $C_{40}H_{56}O_{15}+3H_2O$, while the estimations of the amorphous substance lead to the assumption that the amorphous substance is either a monobasic acid of the formula $C_{40}H_{56}O_{16}+3H_2O$ resulting from the action of water on one lacton group $C_{39}H_{56}O_{13}\begin{matrix}CO-O\\|\\\end{matrix}+H_2O=C_{39}H_{56}O_{13}\begin{matrix}COOH\\OH\end{matrix}$ or a mixture of e. g. a monobasic acid, a dibasic acid and the original crystalline substance. It will be shown, that the strophanthidin, which results by the splitting of strophanthin with acids, is identical with Feist's strophanthidin, which he showed to be a dilacton. A study of the salts which amorphous acid strophanthin can form will doubtless have a bearing on the constitution of the amorphous acid strophanthin. The figures obtained by the combustion and titration of amorphous acid strophanthin will be compared with the calculated figures for the formula of monobasic acid strophanthin of the above given formula.

The reversion of the amorphous acid into the crystalline lacton could not be accomplished. It is interesting to note that the *figures obtained by the combustion of the amorphous body are the same as those obtained by Arnaud and by Kohn and Kulisch for their strophanthins.*

The following method of preparation, which is similar to the method of Arnaud

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[14]This seed, as has been previously mentioned, was found by Prof. E. M. Holmes to be seed of Strophanthus Kombe Oliv.

[15]The comose hair was not gathered with the same care as seeds and pods, because the hairs contained no strophanthin, and the separating of the seeds being a rather disagreeable work, the dust affecting the mucous membrane of the nose, the separating was done in a well-ventilated room.

[16]The Pharmaceutical Journal and Trans., 1887, 17, p. 748.

[17]It is easier, as we afterwards found, to pound the seeds and after one extraction with petroleum ether to grind the extracted mass to a fine powder and extract it again to remove all the fatty oil, for it is impossible to grind to a fine powder the seeds containing fats.

[18]The Pharmaceutical Journal and Trans., 1889, 20, p. 329.

[19]Physiological testing, by Mr. O. E. Closson, showed that four successive extractions, made in the above-mentioned proportion, removed in the first percolation 86.5%, in the second percolation 9.4%, in the third percolation 2.4%, and in the fourth percolation 1.7% (considering 100% to be the whole amount of active substance extracted by these four percolations). Therefore, nearly all active substance is extracted in the first and second percolation.

(the recrystallization of the impure strophanthin being the only differences) was afterwards adopted, because the alcoholic extract did not always crystallize and Arnaud's method gives a better yield.

Crystalline strophanthin as we have shown can be obtained without any chemical purification from the alcoholic extract. It is thus possible to determine whether a certain chemical method of preparation of strophanthin from Strophanthus Kombe seed, gives a yield of naturally occurring crystalline strophanthin or of a derivative of strophanthin.

Method of preparation. 1.5 Kg. ground, fat free Strophanthus seed was percolated with 12 liters 70% alcohol and the percolate was distilled off in vacuo until about 1 liter fluid remained. To this fluid sufficient lead subacetate solution (Liquor plumbi subacetatis, U. S. P.) was added, to obtain an easily filtering mixture. The filtrate is a clear yellow fluid. The excess of lead was removed by hydrogen sulphide and the clear filtrate was evaporated at 40°-45° with constant stirring. Until the fluid becomes concentrated it is important that it be kept alcoholic by frequent addition of a little alcohol. When the fluid has become a thin extract, the alcohol must be evaporated as much as possible. It will then crystallize readily. The crystals are separated on a hardened filter of large surface by suction. The recrystallization is made in the following manner to avoid conversion into the amorphous body. The crystals are dissolved by placing them in a dish with a small amount of 94% alcohol and heating to 40-45° and stirring occasionally. After having filtered the solution, the alcohol is now evaporated to a thick extract at this temperature and water is added until a thin extract is obtained. With constant slow stirring with a motor, the extract is again evaporated to remove the rest of the alcohol. The extract will then crystallize readily. As was observed by Arnaud, the alcohol cannot be used alone to recrystallize, because it leaves strophanthin as a varnish. This recrystallization is repeated until strophanthin is obtained with the properties, which will be described.

Another method of preparation was carried out as proposed by Bourquelot and Herissey[20] to exclude enzym action, by adding 2.6 Kg. fat free ground seed to 15 liter boiling alcohol of 94%. After boiling for twenty minutes the hot fluid was filtered off and the alcohol evaporated in vacuo; this gave an extract from which crystalline strophanthin identical with the crystalline strophanthin made by the previously described method was obtained.

Crystalline strophanthin, identical with the former described crystalline strophanthin, was also obtained by the method, described, from Strophanthus Kombe seed, regularly purchased for the manufacture of Tr. of Strophanthus. The first crystalline strophanthin will be called: strophanthin (ident.), the second: strophanthin (trade). No difference was found between them.

Properties of crystalline strophanthin. Kombe strophanthin (ident. and trade) is a white crystalline substance, showing under the microscope fine needles or long plates.

It contains three molecules of water of crystallization, which are readily given off in a vacuum desiccator more quickly in vacuo at 80°. By placing the dehydrated crystals in a chamber containing moist air the water is taken up again. In

[20]Comptes rendus, 133, p. 690.

a vacuum at 100° C. or 105-110° C. no more water is given off than in vacuo at 80° C. Found by drying at 80° C. and 105-110° C. in vacuo for Strophanthin (ident.): 6.0%-6.5%-6.3%. In strophanthin (trade) 7.1 and 7.0%. Calculated for $C_{40}H_{56}O_{15}+3H_2O$: 6.5% H_2O.

Melting point. The substance melts in its water of crystallization at 158-165°C., becoming a turbid mass. Dried, it melts at 178-179° C. Strophanthin (trade)

Crystalline Kombé-strophanthin.

gave the same results, and by mixing them together the same results were obtained.

Specific rotation was determined in 94% alcoholic solution of air-dried substance.

I. 1.000 gm. cryst. strophanthin (ident.) dissolved in 25 cc. 94% alcohol.

$$(a) \quad D=\frac{100a}{lc}=+31.6 \qquad l=2 \qquad a=+2.53°$$

II. 0.7500 gm. cryst. strophanthin (ident.) dissolved in 25 cc. 94% alcohol.

$$(a) \quad D=\frac{100a}{lc}=+31.6 \qquad l=2 \qquad a=+1.90°$$

III. A determination was also made in absolute (99.5%) alcohol.
0.7500 gm. cryst. strophanthin (ident.) dissolved in 25 cc. 99.5% alcohol.[21]

$$(a) \quad D=\frac{100a}{lc}=+31.3 \qquad l=2 \qquad a=+1.88°$$

IV. A determination was also made in watery solution (to compare with Arnaud's value).
a. 0.200 gm. cryst. strophanthin (ident.) dissolved in 25 cc. water.

$$(a) \quad D=\frac{100a}{lc}=+28.7\% \qquad l=2 \qquad a=+0.23°$$

b. 0.7500 gm. cryst. strophanthin (trade) dissolved in 25 cc. 94% alcohol.

$$(a) \quad D=\frac{100a}{lc}=+30.5 \qquad l=2 \qquad a=+1.83$$

Combustion.

I. 0.2670 gm. cryst. strophanthin (ident.) dried at 80° in vacuo gave 0.1947 gm. H_2O and 0.6073 gm. CO_2.
II. 0.2318 gm. cryst. strophanthin (ident.) dried at 105-110° in vacuo gave 0.1667 gm. H_2O and 0.5291 CO_2.

[21]For differences in rotation of alkaloids in 94% alcohol and absolute alcohol. See Jour. of Chem. Society (London), 1910, 97, p. 1328.

III. 0.2675 gm. cryst. strophanthin (ident.) dried at 105-110° in vacuo gave 0.1846 gm. H_2O and 0.6047 gm. CO_2.

IV. 0.2520 gm. cryst. strophanthin (trade) dried at 105-110° in vacuo gave 0.1802 gm. H_2O and 0.5680 gm. CO_2.

V. 0.2597 gm. cryst. strophanthin (trade) dried at 105-110° in vacuo gave 0.1872 gm. H_2O and 0.5863 gm. CO_2, or in percent:

	S. Ident.			S. trade		Aver.	Aver.	Calculat. f.
	I	II	III	IV	V	S. ident.	S. trade	$C_{40}H_{56}O_{15}$
C	62.03	62.25	61.65	61.47	61.57	61.97	61.52	61.82
H	8.17	8.06	7.73	8.01	8.08	7.98	8.04	7.27

An aqueous solution of cryst. strophanthin has the following properties: Heated with a small amount of a mineral acid and made alkaline afterwards, it readily reduces Fehling's solution.

Crystalline strophanthin can be boiled with glacial acetic acid without producing a substance capable of reducing Fehling's solution. A trace of crystalline strophanthin, when added to sulphuric acid first turns dark green and then brownish.[22]

It gives a white precipitate with tannic acid solution and no precipitate with lead acetate or basic lead acetate solution.

Properties of amorphous acid strophanthin. Acid strophanthin was not obtained in a recognizably crystalline form. It is difficult to determine how much water is present as a hydrate, since amorphous acid strophanthin is hygroscopic. This water is readily given off in vacuo at 100° C., no more water being given off in vacuo at 105-110° C. Found by drying in vacuo at 105-110° 5.9%, in other samples 7.7% and 8.0% of water. Calculated for $C_{40}H_{58}O_{16}+3H_2O$ 6.37%.

Melting point. Acid strophanthin softens at about 100° C. in its hydrate water and melts at 165-170° C. The dried substance softens at 160° C. and melts about 180° C.

Specific rotation was determined in watery solution of air-dry substance 0.400 gm. dissolved in 25 cc. water.

$$(\alpha)\quad D=\frac{100\alpha}{l\,c}=+20.6 \qquad l=2 \qquad \alpha=+0.33$$

Combustion.

I. 0.3375 gm. amorph. acid strophanthin (ident.) dried at 105-110° in vacuo gave 0.2333 gm. H_2O and 0.7477 gm. CO_2.

II. 0.2553 gm. amorph. acid strophanthin (ident.) dried at 105-110° in vacuo gave 0.1717 gm. H_2O and 0.5672 gm. CO_2.

III. 0.2316 gm. amorph. acid strophanthin (trade) dried at 105-110° in vacuo gave 0.1609 gm. H_2O and 0.5145 gm. CO_2.

IV. 0.2645 gm. amorph. acid strophanthin (trade) dried at 105-110° in vacuo gave 0.1873 gm. H_2O and 0.5899 gm. CO_2, or in percent:

	Ident.		Trade		Aver.	Aver.	Calc. f.
	I	II	III	1V	trade	ident.	$C_{40}H_{58}O_{16}$
C	60.42	60.59	60.58	60.82	60.70	60.50	60.42
H	7.75	7.50	7.79	7.94	7.86	7.62	7.36

Molecular Weight of Crystallin Kombe Strophanthin and Other Kombe Strophanthins.

Feist (Berichte 31 (1898), p. 536 and 33 p. 2075), determined the molecular weight of Kombe strophanthin. In his first preliminary report Feist said: "The chosen formula $(C_2H_3O)_{16}$ is also supported by the cryoscopic molecular weight

[22]Reaction of Helbing. The Pharmac. Jour., 1877, 17, p. 924.

determination in water. Calculated 688, found in the average 678 and 680. Notable molecular association occurs with increasing concentration."

The figures found by the determination are reported in his following paper in which Feist says: "The cryoscopic molecular weight determinations can only be determined in water (c=18.9) and give very uncertain results, calculated $C_{40}H_{66}O_{19}$=850.

I. Used air-dry strophanthin hydrate in tablets.

Substance.	Depression.	Mol. Weight Found.	Average Mol. Weight.
0.0956	0.030	572.8	678.5
0.2520	0.069	656.0	
0.3997	0.089	806.8	

The amount of water used was 10.52 gm.

II. Used strophanthin, which was dried several months over sulphuric acid, hygroscopic powder.

Substance.	Depression.	Mol. Weight Found.	Average Mol. Weight.
0.3155	0.079	614.1	680.8
0.6598	0.150	655.3	
1.2178	0.249	752.1	

The amount of water used was 12.29 gm.

The following are the figures obtained by our own research.

The strophanthins used for the experiments were:

I. Crystalline Kombe strophanthin, II, acid amorphous Kombe strophanthin (obtained by the action of water on crystalline Kombe strophanthin), III, amorphous strophanthin Merck.

Ia. Crystalline Kombe strophanthin.

Substance.	Depression.	Mol. Weight Found.	Calculated for $C_{40}H_{56}O_{18}$
0.0874	0.023	481	776
0.1785	0.037	611	

The amount of water used was 15.01 gm.

Another determination was made with crystalline Kombe strophanthin.

Ib. Crystalline Kombe strophanthin.

Substance.	Depression.	Mol. Weight Found.	Calculated for $C_{40}H_{56}O_{18}$
0.0517	0.012	551	776
0.1451	0.032	577	
0.2344	0.053	563	

The amount of water used was 14.91 gm.

II. Acid amorphous strophanthin.

Substance.	Depression.	Mol. Weight Found.	Calculated for $C_{40}H_{58}O_{18}$
0.1865	0.061	390	794
0.3940	0.100	503	
0.5223	0.139	486	

The amount of water used was 14.9 gm.

III. Amorphous Kombe strophanthin-Merck.

Substance.	Depression.	Mol. Weight Found.
0.1407	0.030	596
0.2740	0.054	645
0.4246	0.081	666

The amount of water used was 14.95 gm.

These figures are in agreement with those of Feist for the same concentration. The last determination of the first experiment of Feist is undoubtedly an error. From these figures we observe that with higher concentration the molecular weight increases, therefore the figures of Feist's second experiment become close to the theoretical (776). Feist's explanation of this behavior was that the uncertain results are due to notable molecular *association* by increasing concentration. Through our recent investigation of the conversion of crystalline Kombe strophanthin into the acid amorphous strophanthin we are able to give a better explanation, viz: *dissociation*. This is already indicated by the figures of Feist in which all his molecular weight determination fall well below the calculated.

The molecular weight was therefore determined in a non-ionizable fluid, which at the same time possesses sufficient solubility for strophanthin, in order to obtain the correct values. These fluids, alcohol, acetone, etc., could only be used conveniently by determining the increase in boiling point. The Beckman apparatus was used in which heating is accomplished by circulating vapor (Zeitschr. f. physik. Chemie, 40, 1902, P. 133).

The determination was made with alcohol as a solvent. Beckman determined the constant (molecular increase for 100 cc.)=15.6°.

Ia. Crystalline Kombe-strophanthin.

Cc. of alcohol.	Gm. Subst.	Observed increase	Gm. Subst. in 100 cc.	Found Mol. W.
14.1	0.3020	0.042	2.1464	797
15.7	0.3020	0.028	1.2850	716

Ib. Crystalline Kombe-strophanthin.

Cc. of alcohol.	Gm. Subst.	Observed increase	Gm. Subst. in 100 cc.	Found Mol. W.
12.7	0.3947	0.058	3.1080	836

The average molecular weight found for crystalline Kombe Strophanthin 1/3(797+716+836)=783. Caluculated for $C_{40}H_{56}O_{15}$=776.

II. Amorphous Kombe-strophanthin Merck.

Cc. of alcohol.	Gm. Subst.	Observed increase	Gm. Subst. in 100 cc.	Found Mol. W.
11.6	0.3116	0.044	2.6862	952
12.7	0.3116	0.037	2.4535	1034
14.4	0.3116	0.032	2.1639	1055

The average molecular weight found for Kombe strophanthin Merck 1/3(952+1034+1055)=1014. The barometer stood constant during the experiments.

We believe that crystalline Kombe strophanthin contains two lacton groups, which may be different from the strophanthidin grouping, in that there are OH

radicals in the sugar which may interact with the formation of different lacton complexes and of internal ethers, thus accounting for the two less molecules of water in the molecule of strophanthin than would otherwise be expected. When dissolved in water both of these lacton groups hydrolize to a certain extent into acids, which by their ionization give different molecular weight values, depending on the concentration. Therefore, by greater dilutions the apparent molecular weight calculated, according to the formula of Raoult is smaller, whereas by increasing concentration the molecular weight approaches the molecular weight of the calculated formula. For the acid amorphous strophanthin we believe that the molecule has undergone a rearrangement by which one of the lacton groups is converted permanently into an acid, which remains an acid independent of the concentration.

A simple reaction demonstrated that amorphous Kombe strophanthin Merck must contain a certain amount of acid amorphous strophanthin. Three pieces of blue or neutral litumus paper are moistened with water. A small amount of crystalline Kombe strophanthin is put on one, on the second a small amount of acid amorphous Kombe strophanthin, and on the third piece of litmus paper a small amount of amorphous Kombe strophanthin Merck. The papers indicate (by looking on the other side) that only crystalline Kombe strophanthin is neutral, whereas the other samples behave as acids.

Contrary to Feist's explanation, we find that the lower figures obtained with the cryoscopic molecular weight determination are due to a dissociation of the molecule.

By using alcohol with the ebullioscopic method nearly theoretical figures were obtained for the molecular weight of crystalline Kombe-strophanthin.

Titration of amorphous acid strophanthin with N/10 sodium hydroxide, phenolphthalein as an indicator.

I. 0.5000 gm. amorph. acid strophanthin (air dry) was dissolved cold in 10 cc. N/10 sodium hydroxide and titrated back with N/10 oxalic acid. Found: that 3.2 cc. N/10 sodium hydroxide was necessary to neutralize the strophanthin.

II. The same investigation repeated with 0.5000 gm. air-dry amorph. acid strophanthin gave as result that 3.1 cc. N/10 sodium hydroxide was necessary to neutralize the strophanthin.

III. 0.5000 gm. amorphous acid strophanthin (air dry) was dissolved in 10 cc. N/10 sodium hydroxide and heated until the fluid boiled. The cooled solution was titrated back with N/10 oxalic acid. Found: that 5.5 cc. N/10 sodium hydroxide was necessary to neutralize the strophanthin. Repeating the boiling with more alkali gave only a slight increase of the neutralizing value.

IV. The same investigation as III repeated with 0.5000 gm. air-dry amorph. acid strophanthin showed that 5.4 cc. N/10 sodium hydroxide was necessary to neutralize the strophanthin.

Found in the cold for 0.5000 gm. acid strophanthin: 3.2 cc. and 3.1 cc. N/10 NaOH.

Found by heating for 0.5000 gm. acid strophanthin: 5.5 cc. and 5.4 cc. N/10 NaOH.

Calculated for 0.5000 gm. monobasic strophanthin ($3H_2O$) 5.88 cc. N/10 NaOH.

Amorphous acid strophanthin is much more soluble in water than crystalline strophanthin. A watery solution of amorphous acid strophanthin has the following properties.

It slowly reduces Fehling's solution by boiling (a fresh aqueous solution of crystalline strophanthin dissolved in the cold does not reduce Fehling's solution by boiling).

Heated with a small amount of a mineral acid and made alkaline afterwards; it readily reduces Fehling's solution. It gives a white precipitate with tannic acid solution and no precipitate with lead acetate or basic lead acetate solution.

A trace of amorphous acid strophanthin, when added to sulphuric acid first turns greenish brown and then brown.

When a 12% solution of hydrochloric acid containing crystalline or amorphous strophanthin is boiled no appreciable amount of furfurol or methylfurfurol is formed.[23]

0.2000 gm. pure rhamnose ($C_6H_{14}O_6$) was distilled with 500 cc. 12% hydrochloric acid from a round flask, which was connected with a condenser by a ground joint. The distilling fluid was gathered in an Erlenmeyer flask, which had a mark indicating 400 cc. A small piece of unglazed porcelain was added to the boiling fluid to prevent bumping. The round flask was heated in an air bath. After about 4 hours the distillation was ready and to the clear distillate a filtered solution of 0.300 gm. pure phloroglucin in about 15 cc. warm 12% HCl was added and the Erlenmeyer flask was kept dust free for 15-18 hours. Then the methylfurfurol-phloroglucid, which had settled as a red precipitate, was filtered on a weighed quantitative filter, which had been dried at 97-100°. The precipitate was washed with 150 cc. water and the filter with precipitate dried for 3½-4 hours at 97-100° and weighed. 0.200 gm. rhamnose ($C_6H_{14}O_6$) gave 0.1310 gm. methylfurfurol-phloroglucid or according to the formula of Ellett and Tollens. (Journal f. Landwirtschaft 1905, p. 13.)

$$\text{Rhamnose} = \text{Ph.} \times 1.65 - \text{Ph}^2 \times 1.84 + 0.010.$$

When Ph = amount of phloroglucid.

we find 0.209 gm. rhamnose.

The method was tried out on ouabain (gratus strophanthin), which according to Arnaud and also to Thoms has the formula $C_{30}H_{46}O_{12} + 9\ H_2O$. Arnaud could separate crystalline rhamnose by splitting ouabain with acids. A quantitative estimation of rhamnose was made by Arnaud by titrating the fluids remaining by hydrolysis according to Soxhlet. Arnaud[24] found in this way 24.2% $C_6H_{14}O_6$ in $C_{30}H_{46}O_{12} + 9\ H_2O$ calculated for 1 molecule $C_6H_{14}O_6$ 23.9%.

0.960 gm. air dry ouabain was distilled in the above described manner and gave 0.1540 gm. methylfurfurolphloroglucid or according to the formula of Ellett and Tollens found: 0.2205 gm. rhamnose in 0.960 gm. $C_{30}H_{46}O_{12} + 9\ H_2O$ or 22.9%.

[23]Concerning the furfurol and methylfurfurol estimations:
Krober—Jour. f. Landwirtschaft, 1900, p. 379.
Ellett and Tollens—Ber. 38, p. 492, Jour. f. Landw., 1905, p. 13.
Mayer and Tollens—Jour. f. Landw., 1907, p. 268, Ber. 40, p. 2441.

[24]Comptes rendus 126 (1898), p. 1208.

The method was now applied to crystalline and acid amorphous strophanthin. 0.750 gm. air dry crystalline strophanthin gave 0.0074 gm. brownish phloroglucid. Calculating this as methylfurfurolphloroglucid we get according to the formula of Ellett and Tollens 0.0211 gm. rhamnose ($C_6H_{14}O_6$) in 0.750 gm. air dry crystalline strophanthin or 2.9%. 0.850 gm. air dry amorphous acid strophanthin gave 0.0070 gm. brownish red phloroglucid. When we figure that it is methylfurfurolphloroglucid, we get according to the formula of Ellett and Tollens 0.0215 gm. rhamnose ($C_6H_{14}O_6$) in 0.850 gm. amorphous strophanthin, or 2.5%. If air dry crystalline strophanthin ($C_{40}H_{58}O_{15} + 3\ H_2O$) should contain 1 molecule rhamnose the percentage $C_6H_{14}O_6$ would be 21.9% and for the air dry amorphous acid strophanthin ($C_{40}H_{58}O_{16} + 3\ H_2O$) : 21.4%.

We can conclude, therefore, that *no rhamnose* is present in Kombe strophanthin.

According to Feist rhamnose and d-mannose should be present in Kombe strophanthin. If 2 molecules of d-mannose are contained in crystalline strophanthin then 0.750 gm. $C_{40}H_{56}O_{15} + 3\ H_2O$ should contain 0.325 gm. mannose and 0.850 gm. $C_{40}H_{58}O_{16} + 3\ H_2O$ should contain 0.359 gm. mannose. Therefore, 0.340 gm. d-mannose was distilled with 12% HCl to allow a comparison with the results of the former estimations. When 0.300 gm. phloroglucid was added to the distillate of 0.340 gm. mannose with 12% HCl *no precipitate* was visible after 18 hours. Therefore, d-mannose cannot be the reason of the formation of the small yield of phloroglucid from strophanthin.

Strophanthidin. The strophanthidin prepared by Kohn and Kulisch from their strophanthin is different from the strophanthidin prepared by Feist. By splitting crystalline strophanthin by the method of Kohn and Kulisch or by other methods or splitting amorphous acid *strophanthin with* 1% H_2SO_4, *the same strophanthidin was always obtained and this strophanthidin proved to be identical with that described by Feist.*

Strophanthidin was prepared from crystalline strophanthin by the method of Kohn and Kulisch. (See the prescription of this method above.)

It separated out in yellow crystals, which after recrystallizing three times from hot alcohol and concentrating the solution, separated in fine, large, colorless crystals, which showed under the microscope the same form as the picture of strophanthidin given by Feist. The following procedure gives a better yield than the method of Kohn and Kulisch: To 100 cc. boiling 1% HCl 5 gm. crystalline strophanthin in fine powder was added. After dissolving the strophanthin the fluid was cooled and strophanthidin separated quickly in fine white crystals, which were filtered by suction and washed with water. After two crystallizations from hot alcohol nice large crystals can be obtained. Amorphous acid strophanthin separates a dark resin when heated with 2% HCl. The best method to split amorphous acid strophanthin was found to be boiling with 1% H_2SO_4. 6 gm. amorphous acid strophanthin was boiled with a reflux for one-half hour with 50 cc. 1% H_2SO_4. The yellow separation was repeatedly crystallized from hot alcohol and gave the same strophanthidin as prepared from crystalline strophanthin, therefore, by the action of sulphuric acid, the acid group goes over to a lacton group.

(To be continued.)

PRESCRIPTION FAKES AND HEALTH AND BEAUTY TALKS.*

One of the "features" of the modern metropolitan daily is the "Woman's Page," in which is given, for the education or delectation of feminine readers, reading matter that ranges from the useful to the inane. Naturally enough, we find the important subject of care of the health learnedly (?) discussed by the "Madames" or "Mademoiselles" who have charge of these departments. To the "patent medicine" advertiser who would deceive the reader by publishing his advertisement in "reading matter" style, space on these "Women's Pages" is a valuable asset. A form of deceptive advertisement that of late has become very popular with nostrum exploiters has previously been referred to in these columns as "prescription fakes." The advertisements are usually set as reading matter, and contain information regarding the treatment of some physical ailment by means of the drugs contained in an innocent looking formula; usually all the drugs but one are official, the exception being a "patent medicine" with a name not unlike the pharmacopœial preparations. A modification of the "prescription fake" type of advertisement forms the subject of this article."

Every week or so "Mrs. Mae Martyn's" fake department will appear in the paper, the initials of the "correspondents" and the wording of the "answers" varying, but the usual changes being rung on spurmax, crystos, almozoin, canthrox, quinola, parnotis, kardene and luxor.

Should the innocent reader go to the drug store and ask, say, for four ounces of spurmax, she is given the inevitable "original package," consisting of a tin box bearing a label with the name of the preparation, the method of using it and the various conditions for which the nostrum is recommended. There is also the statement, "Made by H. S. Peterson & Co., 95-97 Kinzie St., Chicago." The company putting out these medicinal agents is not a firm of pharmaceutical chemists, but, we understand, manufactures flavoring extracts and does business largely by means of women agents throughout the country.

Four of these depectively advertised nostrums were analyzed in the Association's laboratory. The laboratory report follows:

ALMOZOIN.

Almozoin, as found on the market, is a pale pinkish-white powder, having a faint odor like benzaldehyd. Qualitative examination of almozoin demonstrated the presence of magnesium, sodium, tragacanth, a carbonate and a borate. Free boric acid, ammonium salts and sulphates were absent. Magnesium and the borate radicle were determined and the tragacanth was approximately estimated. From the results of the examination it would appear that the composition of almozoin is essentially as follows:

Tragacanth (gum tragacanth)	40 percent
Sodium borate (borax)	40 percent
Magnesium carbonate	20 percent

(Retail price of almozoin, one-half dollar; estimated cost of ingredients, three cents.)

*Kansas State Board of Health Bulletin.

CRYSTOS.

The specimen package of crystos which was purchased contained about one ounce and was a coarse, white odorless powder. Qualitative tests demonstrated the presence of chlorid, free boric acid, borate, sodium and traces of sulphate. Alkaloids, ammonium salts, carbonates, heavy metals and potassium were absent. Determinations of chlorid and of free and of combined boric acid were made, from which it would appear that the composition of crystos is about as follows:

Dried sodium borate (dried borax)	20 percent
Sodium chlorid (common salt)	20 percent
Boracic acid	60 percent

(Retail price of crystos, one-half dollar; estimated cost of ingredients, one cent.)

PARNOTIS.

Parnotis is a pale, cream-colored, fine powder, having an odor resembling cologne, which dissolves in water and forms a turbid solution, which becomes clear by filtration. Qualitative examination of the preparation demonstrated the presence of bicarbonate, sulphate, sodium and traces of chlorid and of iron. Quantitative determinations of the sulphate and of the bicarbonate were made, from the results of which it would appear that parnotis consists essentially of:

Impure anhydrous sodium sulphate	25 percent
Sodium bicarbonate	75 percent

(Retail price of parnotis, one-half dollar; estimated cost of ingredients, less than two cents.)

SPURMAX.

Spurmax is a pink, crystalline powder, highly perfumed. Qualitative tests demonstrated the presence of magnesium and of a sulphate. The absence of more than traces of chlorid, carbonate, organic compounds and heavy metals was shown by the usual tests. Quantitative determinations were made for magnesium, for sulphate and for water. Microscopic examination indicated that the coloring matter was very unevenly distributed throughout the preparation, some crystals being colorless, while others were very highly colored. Essentially, spurmax consists of:

Crystallized magnesium sulphate (Epsom salts)	100 percent
Perfume	Trace
Coloring matter	Trace

(Retail price of spurmax, one-half dollar; estimated cost of ingredients, one cent."

NEW FORM OF AN OLD TRICK.

Spurmax, then, when subjected to the critical light of analysis and shorn of the hypothetical virtues with which "Mrs. Mae Martyn" invests it, proves to be Epsom salts colored pink and rendered highly odoriferous; the "flesh reducer that . . . should reduce your weight ten pounds in a few weeks" contains, apparently, nothing more marvelous than sulphate and carbonate of soda—and so it goes. The old, old trick of the charlatan, the quack and the nostrum exploiter is again in evidence. Give some well-known drug a fancy name, disguise it physically if possible, advertise it as possessing marvelous virtues and sell it at a price out of all proportion to its value.

"HEALTH AND BEAUTY TALKS."

For several months past many newspapers have been carrying on the "Woman's Page" what, to the uninitiated, appears to be a department devoted to answering queries regarding health. The "department" is entitled "Health and Beauty Talks," or "Health and Beauty Helps," or "Aids," or "Secrets"—the last word of the title varying with the copy. Under the title is the legend, "By Mrs. Mae Martyn." The subject matter consists of information(?) on questions of health, given in the "answers to correspondents" form; the first and last "answer" usually makes reference to none but simple home remedies or pharmacopœial preparations. For instance:

"Q. 1. A good foot wash is made of a pint of water, to which is added a tablespoonful of salt and a pinch of alum and a few drops of arnica."

Every other "answer," however, contains a "joker" in the form of nostrum which is referred to in such a way as to lead the unsuspecting reader to imagine that it is but an ordinary official drug. Thus, in the advertisement before us, there are nine replies. Here is a sample:

"Ethel J.: (1) It made me happy to read your letter. I am glad you think so well of my recipes that you cut them out and pass them along to your friends. None should have difficulty in getting from her druggist any ingredient I name, for I never advise use of anything that is not sold in first-class drug stores everywhere. (2) The only objection I know to the use of liquid complexion beautifiers is their high cost when purchased in a ready manufactured state. You can make at home a fine 'liquid powder' that softens and whitens the skin by putting two teaspoonfuls of glycerin and four ounces of spurmax in one-half pint of boiling water; let stand until cold. Apply with the palm of the hand and rub until dry. I prefer this spurmax wash to any face powder I can buy."

The "joker" in this answer," of course, is spurmax. In the other "replies," all worded in the same deceptive way, the reader is urged to get—

Crystos—"For tired and inflamed eyes."

Almozoin—"For blackheads, . . . freckles and tan."

Canthrox—"For shampooing purposes."

Quinola—"To remove dandruff, stop falling hair, relieve itching . . . and promote the growth of hair."

Parnotis—"A flesh reducer that . . . should reduce your weight ten pounds in a few weeks."

Kardene—"A splendid blood tonic and liver invigorator . . . for pimples, yellow blotches, sallow complexion, scrofula and all eruptions of the skin."

Luxor—"A very dear friend of mine cured a most obstinate case of eczema with this remedy."

RECIPROCAL INTERSTATE REGISTRATION.

WM. MITTELBACH, PH. G., BOONVILLE, MO.

Requiring the practitioner of pharmacy to be a graduate from a school of pharmacy, in addition to passing a state board, is the hitch or stumbling block that makes general interstate registration practically impossible. In those states where this is required by law, the non-graduate cannot possibly register, no matter

how competent or efficient he may be. The writer is of the opinion that our higher courts would not sustain such a position. A druggist is one who buys and sells drugs. When he becomes skilled in compounding and the preparation of drugs and versed in their identification he is an apothecary or pharmacist. To withhold license from such an one because be obtained his knowledge outside of college walls, seems to me not to be tenable.

At the Denver meeting one of our foremost teachers of pharmacy—one who has spent his whole life in the lecture room and laboratory—clearly and explicitly expressed himself that in his opinion no board has a right to question the source of a candidate's knowledge. Such a position taken by one who could well take the opposite view, should have some weight with those grappling with the problem of interstate registration. Would that our vocation were wholly professional; then could we exact higher professional training.

This is, however, not the case; the business of the pharmacist is more one of a mercantile character; that is we are more druggist than apothecary or pharmacist. The logical and sensible view to take of the situation is that of the Professor. When we do this, justice will be done to the applicant for registration, and reciprocal registration will be readily brought about. A person being licensed in one state, should have the right to cross the line into another state and register without again having to pass an examination. It seems foolish to think that one competent to compound and dispense drugs in one place, is not competent to practice just across the line in another state. An injustice is being done to the pharmacist and the public gains nothing thereby. Where improvement can be made is with the boards. It is evident that the business of examining boards is to pass on all applicants alike, no matter where from, and that special recognition of college graduates should not be their business. Let us expend our energies in harmonizing examinations and bring about a more uniform standard, on a *common sense basis.* Persons equipped with good college and laboratory training will take care of themselves. They don't need any special consideration, moreover the non-recognition of diplomas will at once remove all danger of recognizing weak and inferior schools. When the several boards will stand on such a platform, the establishment of a national examining board will be feasible, and the registered pharmacist will receive his just dues and proper consideration. After all is said, it depends almost wholly on the individual, be he a graduate pharmacist, or a self-made pharmacist, whether he succeeds in business or not. Confidence of the people gauges his success, and gives him his proper professional and commercial standing.

THE NEED OF FEDERAL LEGISLATION IN PHARMACY.

ALBERT H. DEWEY, PH. G., M. S., PURDUE UNIVERSITY, LAFAYETTE, IND.

One who knows enough to fill a prescription on the north bank of the Columbia River should know enough to fill the same prescription on the south bank of the same river even though it is in another state. A man who is qualified to practice

pharmacy in Kansas City, Mo., should be competent to do the same thing in Kansas City, Kan., without additional qualification, examination, or registration.

It should be apparent without much argument that the nature of the practice of pharmacy, and incidentally, that of medicine as well, is such that it cannot be hemmed in or limited by the arbitrary confines of state boundary lines. It differs no more in different states than it does in different localities in any given state. Our Pharmacopœia and National Formulary are national standards and are the same in every state. In fact, so well recognized is this principle, that an organization of most of the state boards of pharmacy has been effected "to provide for interstate reciprocity in pharmaceutical licensure based upon a uniform minimum standard of pharmaceutical education and legislation."

Worthy as this object may be, and earnestly as we may all hope to see it accomplished, I desire nevertheless to point out that such an association is purely voluntary and that under existing laws there is no way of making the rulings of this association authoritative or binding upon any state. Moreover the conditions under which interstate reciprocity is granted should not be subject to the whim or caprice of any future board of pharmacy in any given state. Some of the states at present will not become active members, while others will not affiliate themselves with the movement even as associate members and there is no way of compelling them to do so. Universal reciprocity is therefore by no means a certainty near at hand and can never be guaranteed for the future.

From all quarters comes the heartiest commendation of the happy idea of a federal law controlling the handling and sale of narcotic drugs. All thoughtful pharmacists are agreed that state laws, however stringent, are inefficient to cope with this problem. There are many other fields in which the need of federal legislation is recognized, and it seems to me that the situation is analagous with reference to pharmacutical licensure.

What we need is not universal interstate reciprocity, but a United States licensure by a properly constituted authority. We need a federal pharmacy law, creating either a United States Board of Pharmacy or a Bureau of Pharmacy, with powers to examine candidates, to grant licenses valid in the United States and its possessions, and to revoke such licenses for cause, fixing the minimum educational requirement for examination and defining the rights and privileges of such licensed pharmacists.*

Doubtless a more efficient plan would be an extension of the scope and powers of the Public Health Service to include the above functions save, of course, those things defined in the act so extending its powers.

The practice of pharmacy certainly bears a most vital relation to the public health and it would seem that both could be better conserved and protected by a federal control of pharmacy than under the present system of control by state boards.

The same is doubtless true of medicine, dentistry, and all allied professions which have a bearing upon the conservation of the public health. I am, here, however, speaking only of pharmacy and I am free to confess an utter inability

*Amendment of the Federal Constitution would, of course, be necessary to make such a law valid.—EDITOR.

to see any hope of a "uniform minimum standard of pharmaceutical education" or "uniform legislation" when this uniformity must be sought at the hands of forty-eight different state legislatures. Uniform enforcement of the law by forty-eight different state Boards of Pharmacy might indeed be questioned even if the impossible were accomplished in securing uniform legislation.On the other hand a federal pharmacy law with federal enforcement would be uniformity itself.

Recently there has been considerable agitation concerning a distinction between a pharmacist and a druggist. In some parts of the country this has taken the form of an effort to certify certain pharmacies or to certify certain pharmacists (a point upon which published accounts are not clear) but so far it has met with no success.

This agitation is partially the result of a commendable effort on the part of physicians to establish a means of *knowing* for a certainty where their prescriptions will be properly filled with "pure and standard drugs as ordered." It is also partially the result of the experience of the past, which proves the wisdom of separating pure pharmacy and the dispensing of prescriptions from the heterogeneous merchandizing of the drug store. Such a separation would remedy many of those. Unsatisfactory conditions of present-day pharmacy which have contributed to this agitation, would be in perfect accord with the wisdom of the ages, would injure no man now in the business, would result in better service to the physician and the public, and therefore should be made.

I should like to point out that the enactment of such a federal pharmacy law as above indicated would afford an effective means of distinguishing between a pharmacist and a druggist and of separating the pharmacy from the drug store, a consummation which cannot be attained under state laws no matter how devoutly it be wished.

ADVERTISING NOT AN OCCULT ART.

Too many people acquire the idea that advertising is an occult art. The merchant in a small town is too apt to say to himself: "I can't afford to hire an advertising expert, and there are none in this town, if I could. I don't know anything about the magical art myself. Therefore I won't attempt to advertise." And he doesn't.

Advertising is not a black art. The larger towns, of course, have advertising men who get very expert in their lines, and who can tell you how to engineer to the best advantage any sort of an advertising proposition from a two-line reading notice to a $100,000 campaign. This is an age of highly trained specialists, and advertising has its specialists. Most of them, by the way, trained themselves. The are is still in the pioneer stage, and men now living are blazing the trails.

You can write an advertisement. You might not be able to plan a large campaign without any waste, but you can write an advertisement, and possibly a good one.

To write an advertisement, you proceed almost exactly as in writing a telegram. That is, you omit all unnecessary matter; you boil it down. You choose short, plain words, which are not likely to be confused with similar words of different meanings.—*W. S. Adkins, in National Druggist.*

Papers Presented to Local Branches

ON UNIFORMITY IN DRUG STANDARDS AND UNIFORM REQUIREMENTS IN DISPENSING.*

J. ROEMER, WHITE PLAINS, N. Y.

In a paper by L. E. Sayre, of Lawrence, Kansas, given as a reprint from the Journal of the Kansas State Medical Society, this subject was presented at the February meeting of this Branch, and after discussion was made a special order for consideration at this meeting.

The object of this presentation, as I deduce it, is to obtain an expression of sentiment from the members of this Branch as well as from pharmacists at large, and to lend influence and aid to a movement that should result in great good to both medicine and pharmacy, if successfully carried out.

At this time it must be apparent to all observant pharmacists and physicians that the discussion is unquestionably prompted by a desire to ameliorate existing conditions which are recognized as evil, operating as an almost insuperable barrier to the harmonious relations which should exist between pharmacy and medicine, retarding progress and preventing the fulfillment of the obligations which pharmacists and physicians owe to their respective callings.

That these conditions have long existed is true, but what is surprising is the fact that up to the present time no concerted movement for their correction has been advocated, nor has there been any endeavor to ascertain to what degree they are responsible for the iniquities attributed to them. It is therefore opportune that some missionary work be undertaken and the subject thoroughly agitated.

Taking up the first part of this subject, "Uniformity in Drug Standards," and looking over the field of accomplishment in this direction we find that legal enactments with penalties attached are the only instruments at our disposal to provide for obtaining fairly standard drugs employed for the alleviation of disease. This is an indictment of both professions, for it is based on the weakness inherent in human nature, and opportunity ever seeks to profit at the expense of both professions. Medicine no less than pharmacy is culpable, and perhaps more so, by reason of its exemption to a great extent from these legal requirements.

The laws in most states concerning drug standards have some reference to what such standards should be, and many of them are phrased to meet the wording of the national law. This, however, has proven inadequate to meet the issue, for the exemption provision therein contained gives too wide a latitude and permits the sale of a drug of any standard. This is the largest loophole which needs closing, without which no real progress can be made.

*Read before the New York Branch, March 10, 1913.

It is palpably evident this provision extends immunity to all who are indifferent to better standards. This having served as the model was to a great extent copied and embodied in the several state regulations and served as a means for transferring the same immunity to intra as well as interstate commerce.

In a paper presented at the last meeting of the N. Y. S. Ph. A., particular attention was directed to this provision, since which time in an address delivered by Dr. Lyman Kebler, on the "Quality of Drugs on the Market," and printed in the Journal of the A. M. A. in the issue of November 12, 1912, it is stated that

"The proviso of section 7 is unfortunate in many respects. In the first place the standard is clearly set forth in the first part of the section, and then the proviso is inserted, knocking down the standard. This proviso not only works injury to the wholesaler, manufacturer, and retailer, but may do incalculable harm to the physician and unfortunate sick. * * * It is hoped that the medical profession will exert its influence in eliminating or modifying this proviso so as to make it possible for the physician to secure drugs of unquestioned quality and purity."

This is the obstacle in the way, and so long as this is in the statutes, all efforts directed to uniformity in drug standard will miscarry.

The second part of this subject, "Uniform Requirements in Dispensing," does not present so clear a course, for we here are taking up a subject which is part of an economic condition and which through long continued existence is claimed as a right, and grasping this as a first offense will let loose a perfect torrent of argument, charges and counter charges, but if taken up by both professions with the spirit of just contention we may hope to some day crown our efforts for a better understanding.

On the assumption of our right as pharmacists to question this condition, what can we offer to offset it? Is every pharmacist on the side of right in demanding a reformation?

As a recognized evil, however great it may be from our point of view, is it not a condition to great extent brought about through carelessness and indifference on the side of pharmacy?

Through our own apathy iniquities have crept in; men who were more alert to the conditions set up manufacturing plants; others foisted nostrums and proprietaries upon us; others again resorted to quackery, each and all tending to lure away, little by little, what by right belonged to neither, until today we have seething discontent in pharmacy and in medicine.

The subject advanced by Professor Sayre is timely—it is more than timely. It is absolutely necessary for the salvation of pharmacy and the redemption of medicine that the two professions come together upon a square issue of fact and clear away the influences that are operating to destroy the confidence necessary for the help that each should be to the other.

Professor Sayre considers self-respect and ethics as fundamentals. I agree with him, but I do not lose sight of the fact that self-respect and ethics followed by a few, will never redeem us. It is through reliance on these props that we are today living under the conditions we now have.

What is needed are drastic measures, in the form of simple, plain and direct mandates.

Let the physician state his demands on pharmacy, that no nostrums of any kind be supplied, whether they be in disguise as open formula, or so-called patent or ethical proprietaries; that pharmacy find no reason for prescribing; that pharmacy confine its whole effort in the preparation and supply of reliable medicaments.

Let the pharmacist demand that physicians within certain distances from source of supply write prescriptions for medicaments as required, waiving emergency treatment.

That physicians who find it incumbent upon them to supply medicine be subject to the same rigid control as the pharmacist, both in respect to their qualifications and in respect to the quality of drugs dispensed; and that the dispensing physician be required to record all selfdispensed medicaments, which record shall be subject to regular inspection.

The best means of proceeding to the solution of the problem is through the honest and sincere cooperation of the A. M. A. and A. Ph. A., each conceding something to the other, and being thoroughly in accord with justice to both. Then medicine will revert to the science of diagnosis and prescribing, and pharmacy will again claim its own as the science and art of providing the medicaments.

GROWTH OF THE HEROIN HABIT.

The Syracuse Retail Druggists' Association has drafted an ordinance to suppress the heroin evil which has been submitted to the city council. Members of the association declare that the growth of the heroin habit in Syracuse during the last eighteen months has been appalling. Dope users who found that police surveilance made it very difficult to secure opium, morphine and cocaine, soon learned that heroin could be easily obtained. No prescription is necessary. As a result they began using this drug, and the habit grew by leaps and bounds. It started in the poorer districts, but soon spread to the better portions of the city.

Heroin had formerly been used in cases of bronchial trouble, but the demand for it had not been heavy. "Heroin tablets are now being purchased in hundred lots," said Mr. Weston, "and the habit is spreading throughout the city. No one realizes the extent of the use of this drug except the physicians and the retail druggists. Young men who want to brace up in order to go to work are dosed with heroin. They usually try the dose a second time and a third, and soon they become habitual users. Young women up late at night use the drug once or twice and then become addicted to it."—*Voice of The Retail Druggist.*

Of General Interest

SECOND MEETING OF THE NATIONAL DRUG TRADE CONFERENCE.

MINUTES OF THE EXECUTIVE COMMITTEE.

The Executive Committee met in Room 132 of the New Willard Hotel at 11:00 o'clock Wednesday morning, April 9, those present being John C. Wallace, Chairman, Dr. J. H. Beal, James F. Finneran, C. Mahlon Kline and Charles J. Lynn, alternate for Secretary Charles M. Woodruff, who was ill at his home in Detroit and unable to be present. The Committee had under discussion:

First—The Harrison bill, known as H. R. 28277.

Second—A bill prepared by Mr. Samuel Rosengarten modeled after No. 28277.

Third—A bill drawn by Mr. Charles M. Woodruff modifying the Rosengarten bill.

Fourth—An entirely new bill submitted by Mr. F. H. Freericks, representing the N. A. R. D., and

Lastly—A bill known as the "American Medical Association Bill."

For the guidance of the Committee the following resolution, offered by Dr. J. H. Beal and second by Mr. J. F. Finneran was adopted:

"*Resolved,* That it be the sense of this Committee that the bill is not intended, and ought not to be intended, to regulate sales to consumers, but only to trace narcotic drugs in commerce to the hands of the last distributor, and that the regulation of the sale of such drugs to the consumer in intrastate commerce should be left entirely to state, territorial and other local laws."

After a very thorough discussion lasting until midnight, with only brief adjournment for lunch and dinner, a bill was drafted for submission to the Conference the next morning embodying in the main the provisions of the Rosengarten and Woodruff drafts, although, as a matter of fact being a composite bill containing what the Executive Committee considered to be the best features of all of the bills submitted for its consideration.

The Committee again met in Room 132 at 2:00 o'clock Friday afternoon, April 11, to carry out the instructions of the Conference as embodied in the resolution introduced by Dr. J. H. Beal, and found in the minutes of the meeting of the Conference Friday morning.

The bill as it left the Conference received only a few minor changes at the hands of the Executive Committee and these having to do mainly with changes in the "language" of the bill in order to harmonize certain inconsistencies brought about by the changes made in the bill by the Conference itself. The intent of the bill, however, was in no wise changed and a copy of the bill as presented to the Hon. Francis Burton Harrison is herewith attached and made a part of this report.

The bill as it left the Conference received the very careful consideration of the

Executive Committee from 2:00 o'clock Friday afternoon until late that evening, when it was turned over to a stenographer for final copies.

On Saturday morning, April 12, at 11:00 o'clock, the Executive Committee, with the exception of Mr. Kline, who was called home, met by previous engagement the Secretary of the Hon. Francis Burton Harrison, Miss Lanham, in Mr. Harrison's office in the Congressional Office Building, and there explained the Conference bill section by section, pointing out wherein it differed from the Harrison bill, H. R. 28277. Before leaving the office we requested Miss Lanham to say to Mr. Harrison that if he wished to make any changes in the Conference bill that the Committee would like very much to have a conference with him to discuss the changes before the bill, as he might amend it, was submitted to Congress so that after the bill was once introduced it might have the hearty support of all of the organizations represented in the Conference. Miss Lanham stated that this was just what Mr. Harrison wanted, and the Committee left the office with that understanding. It was impossible to see Mr. Harrison himself then, as explained by Miss Lanham, because of the fact that he could not get away from the Democratic caucus considering the tariff bill.

Respectfully submitted,

CHAS. J. LYNN, Secretary pro tem.

MINUTES OF THE SECOND MEETING OF THE NATIONAL DRUG TRADE CONFERENCE, WASHINGTON, D. C., APRIL 10-11, 1913.

(First Session.)

Delegates to the Conference met in the Gridiron Room of the New Willard Hotel, Washington, D. C., April 10, at 10:00 a. m. Chairman John C. Wallace, New Castle, Pa., presided. Charles J. Lynn, alternate for Secretary Charles M. Woodruff, was on motion of James H. Beal, elected Secretary pro tem of the Conference.

The roll call showed the following delegates present:

Representing the American Pharmaceutical Association—

John C. Wallace, New Castle, Pa.
S. L. Hilton, Washington, D. C.
J. H. Beal, Scio, Ohio.

Representing the National Wholesale Druggists' Association—

C. Mahlon Kline, Philadelphia, Pa.
E. D. Taylor, Richmond, Va.
Albert Plaut, New York, who held the proxy of F. E. Holliday, New York City.

Representing the National Association of Manufacturers of Medicinal Products—

Adolph Rosengarten, Philadelphia, Pa.
A. R. L. Dohme, Baltimore, Md.
Charles J. Lynn, Indianapolis, Ind., who held the proxy of Charles M. Woodruff, Detroit.

Representing the American Association of Pharmaceutical Chemists—

R. C. Stofer, New York City.
A. S. Burdick, Chicago, Ills., holding the proxy of W. C. Abbott, Chicago.
George Hall, holding the proxy of Willard P. Stearns.

Representing the National Association of Retail Druggists—

W. C. Anderson, Brooklyn, N. Y.
F. H. Freericks, Cincinnati, Ohio.
J. F. Finneran, Boston, Mass.

The following report of the Secretary of the Conference, Mr. Charles M. Woodruff, was read and approved:

SECRETARY'S REPORT.

To the Officers and Members of the National Drug Trade Conference:

"Regretting my inability on account of sickness to personally attend the meeting of the Conference called to be held Thursday, April 10, at the New Willard Hotel in Washington, D. C., I transmit herewith the official minutes of the proceedings of the Conference held January 15, 1913.

Copy of General Letter No. 1.

What suggestions I have received in response to such letter.

Preliminary financial report.

"I have no comments to make upon the suggestions received further than to express my regret that circumstances beyond my control prevented me from submitting them to the Executive Committee for study as contemplated in the first resolution quoted in General Letter No. 1.

"I desire to point out, however, that the Conference Bill introduced by Mr. Harrison as H. R. 28277, while as near perfect as any bill the Conference will agree upon so far as our understandiing of it is concerned, when carefully analyzed in the quiet of the study was found to be full of inconsistencies, ambiguities and constitutional pitfalls as likely to be practically and judicially construed. Mr. Rosengarten has had this bill redrafted in a way, I think, that avoids these inconsistencies, ambiguities and pitfalls and meets the criticisms submitted on these scores.

"I have tried to look at the Rosengarten bill fairly from the viewpoint of every one concerned; and when three sections of it are modified as I will suggest, I do not see where any reasonable importer, manufacturer, wholesaler, retailer, physician, veterinarian or dentist can find any fault with it. The physician's prescriptions are not affected by the bill, neither is the druggist in filling them. Then again, the doctor is not restricted in purchasing; but if he purchases he must do so upon the same terms the druggist does, and this is only fair. It seems to me, however, that Section 5 of the Rosengarten bill as drafted is entirely unnecessary and will impose a burden that will probably fall heavier upon the wholesaler than any other class and nearly as heavy upon the retailer. Remembering that the law will require every purchaser to keep duplicate copies of his orders, what necessity exists for requiring him to register such purchases in a book daily? I submit a draft embodying a provision for a monthly report upon a form to be provided by the Collector of Internal Revenue which the importer, manufacturer, wholesaler or retailer, as the case may be, can make out from time to time at his convenience without interference of the rush of getting out orders. This monthly report can be compiled from the retained duplicate orders for the month and will answer every purpose.

"When I read Section 6 of Mr. Rosengarten's bill I supposed its intent was to punish a registered dealer for a sale to an unregistered dealer, even when he had received the official order. Then it occurred to me that if this be true what protection to the dealer is the official order. When I read this section the second time I perceived that the intent was to forbid shipments by those who had not

registered. Now this intent can be made more clear by transposing the words 'who shall not have registered and paid the special tax as required by Section 1 of this Act,' so that they will come immediately after the words 'any person' in the first line of Section 6 of Mr. Rosengarten's bill instead of after the words 'District of Columbia' in the fourth line.

"As I have said most of the criticisms received to H. R. 28277 related to inconsistencies, ambiguities, possible constitutional pitfalls and matters of form rather than of substance. So far as the substance is concerned the criticisms have about all been directed to Section 10, exempting certain provisions from the operation of the act and most of these have been reasonable in my opinion. Why restrict the sale of preparations of Coca that contain no Cocaine? Or Coca Leaves from which the cocaine has been extracted? Or of compound medicinal tablets, pills, etc., in which cocaine, morphine, etc., are combined practically in such a way as to prevent the use of the narcotic ingredient to satisfy the habit, and render unlikely that it will create a habit? Therefore, instead of the corresponding provision in Mr. Rosengarten's bill, which is Section 11, I submit the enclosed, based upon careful consideration of all the suggestions I have received. Please note the punctuation—the attempt to divide classifications by semicolons. Please also note that I have incorporated a provision not contained in any suggestion and which is entirely original with me, to wit: That a compound medicinal tablet, etc., to be exempt must contain at least as much non-narcotic medicinal ingredient as it does of the narcotic ingredients mentioned in the statute. I think this will prevent the exemptions from being abused or perverted.

"If it could have been my privilege to attend this meeting of the Conference I should urge that the Conference make the amendments to the Rosengarten bill that I suggest in this letter and adopt it as its last word upon the subject. I understand the attorney who drew the Rosengarten bill attempted to do nothing more than to put H. R. 28277 in such form as to relieve the latter of all ambiguities, inconsistencies and possible constitutional pitfalls. To my mind he has done his work admirably, and the only changes I suggest are matters of substance which I believe all who have studied the matter will concede to be important.

"I must say, however, that I have not had time to study the bill submitted by Mr. Freericks; therefore my commendations of the Rosengarten measure must not be accepted in any sense as derogatory of Mr. Freericks' suggestions. Another measure submitted by Mr. Queeny is worthy of your consideration."

I remain— Yours very truly,

(Signed) CHARLES M. WOODRUFF, Secretary.

APRIL 7, 1913.

The following resolution adopted by the Executive Committee was reported to the Conference, and on motion of Mr. Kline, seconded by Mr. Dohme, was adopted by the Conference:

Resolved, That it is the sense of this Conference that the bill is not intended, and ought not to be intended, to regulate sales to consumers but only to trace narcotic drugs in commerce to the hands of the last distributor, and that the regu-

lation of the sale of such drugs to the consumer in intrastate commerce should be left entirely to state, territorial and other local laws.

The bill as reported by the Executive Committee was then read in full by the Secretary.

Dr. W. C. Woodward, Health Officer of the District of Columbia, and Chairman of the Legislative Committee of the American Medical Association, who was present, was introduced to the Conference and on motion was extended the privileges of the floor. The privileges of the floor were also extended to Mr Samuel Rosengarten, Philadelphia.

It was then moved by Mr. Anderson that the bill be taken up seriatim, and that it then be referred to the delegates of the various organizations represented for consideration before final adoption. The motion carried.

The reading of the first draft of the new bill as prepared by the Executive Committee precipitated an extended discussion of the question whether the Executive Committee had met the issue regarding the possible unconstitutionality of the proposed measure. In order to have a careful study made of the subject, a sub-committee consisting of Dr. James H. Beal, F. H. Freericks, Dr. W. C. Woodward and Samuel Rosengarten, was appointed to consider this subject and redraft certain provisions of the bill so as to meet the various constitutional questions raised.

Throughout the morning session of the Conference a number of matters of minor detail and character, with respect to the phraseology of the bill as prepared by the Executive Committee, were submitted to this Special Committee with authority to report at a later session.

After an extended discussion of the bill as submitted by the Executive Committee the Conference adjourned to meet at 4:00 p. m. Thursday.

(Second Session.)

The delegates met at 4:00 o'clock on the afternoon of Thursday, April 10, and when it was reported that the Special Committee was not yet ready to report, on motion of Mr. Finneran seconded by Mr. Stofer, the Conference adjourned to meet at 8:00 o'clock Thursday evening.

(Third Session.)

The Conference met at 8:00 o'clock Thursday evening. Mr. G. Frank Bailey, Baltimore, was present as proxy for Mr. F. E. Holliday, in the absence of Mr. Albert Plaut, who was called home.

The Special Committee reported and the Conference devoted the evening to the consideration of the multitudinous details of the bill with the purpose of perfecting it in such manner as to make it acceptable to the members of the Conference. At midnight the Conference adjourned to meet at 9:00 o'clock Friday morning.

(Fourth Session.)

The Conference met at 9:00 o'clock Friday morning in the Gridiron Room of the New Willard Hotel, where the sessions of the Conference were held. Mr. R. C. Stofer, representing the American Association of Pharmaceutical Chemists,

who was compelled to leave, left his proxy with Mr. H. A. Stiles. The following resolution offered by Mr. Lynn, seconded by Dr. Beal, was adopted:

Resolved, That the thanks of the National Drug Trade Conference be extended to the Western Union Telegraph Company for the very courteous and unusual consideration extended us through Mr. G. L. Diven, Night General Traffic Chief, in making it possible to have our proceedings typewritten each day at the conclusion of our deliberations after the hour of midnight, when it was impossible to obtain the services of public stenographers for this purpose; and be it further

Resolved, That the Secretary be instructed to transmit a copy of these resolutions to Mr. Diven.

On motion of Dr. J. H. Beal, seconded by Mr. J. F. Finneran and Mr. W. C. Anderson, the following resolution was adopted:

1. That the Conference approve the draught of the bill before it as embodying, in the main, the substantive provisions which a Federal law regulating the distribution of opium and coca leaves and their derived narcotic should contain, but the Conference does not undertake to defend the constitutional validity of all of its several provisions.

2. That the Executive Committee is hereby instructed to present the draught to the Hon. Francis Burton Harrison, and to express to him that it is our hope that it may be embodied in a bill without greater changes in its substantive provisions than shall be necessary to cover constitutional defects and to add greater certainty and definiteness when necessary.

3. That the Executive Committee is authorized to make such minor changes in the language of the draught as may seem to them necessary on subsequent study, provided such changes do not operate to change the intent of its substantive provisions, and provided also that the members of the Conference be permitted to express their disapproval to the Conference by mail through the Secretary of such changes as the Executive Committee may make.

4. That the Conference hereby expresses to the Hon. Francis Burton Harrison its sincere appreciation of the patience he has manifested in considering the merits of the various propositions presented to him by this Conference and of the courtesy which he has uniformly extended to the Conference, its officers, committees, and individual members.

The following resolution offered by Mr. Hall, seconded by Mr. Finneran, was adopted:

Resolved, That the thanks of the Conference be extended to the Chairman, Mr. John C. Wallace, for the fair, kindly and impartial manner in which he presided over the Conference.

Dr. Dohme stated that the delegates representing the National Association of Manufacturers of Medicinal Products would recommend to their Association that its hearty support be given the Conference bill.

Mr. Hall, speaking for the delegates of the American Association of Pharmaceutical Chemists, also guaranteed the support of their organization in behalf of the Conference bill.

Dr. W. C. Woodward expressed his thanks to the Conference for the privileges extended him.

Mr. Samuel Rosengarten also expressed his appreciation of the courtesies shown him.

The bill submitted to the Executive Committee in accordance with the Beal resolution and as changed by the Committee in certain minor points under the

authority given it by the Conference and as finally submitted to the Hon. Francis B. Harrison, is attached hereto and made a part of this report.

On motion of Mr. Hall, seconded by Dr. Beal, the Conference adjourned subject to the call of the chair.

Respectfully submitted,

CHAS. J. LYNN,
Secretary pro tem.

THE COMPOSITE BILL APPROVED BY THE CONFERENCE.

A BILL

To impose a tax upon opium and coca leaves, upon imported compounds, manufactures, salts, derivatives and preparations thereof; imposing a special tax upon persons who produce, import, export, compound, manufacture, deal in, dispense, sell or give away opium or coca leaves or any compound, manufacture, salt, derivative or preparation thereof; providing for the registration of such persons with the collectors of internal revenue; and for other purposes.

Sec. 1. Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That on and after July first, nineteen hundred and ——, every person who produces, imports, exports, manufactures, compounds, deals in, distributes, sells, dispenses or gives away opium or coca leaves or any compound, manufacture, salt, derivative or preparation thereof, shall register with the collector of internal revenue of the district his name or style, place of residence, trade or business, and the place where such trade or business is to be carried on. *Provided*, however, that the office, or if none, then the residence, of any person qualified by state or territorial law or by the laws of the District of Columbia to practice medicine, dentistry or veterinary medicine, shall be considered to be his place of business.

At the time of such registry and on or before the first day of July annually thereafter every importer, exporter, producer, manufacturer or wholesaler of opium or coca leaves or of any compound, manufacture, salt, derivative or preparation thereof, shall pay to the said collector a special tax at the rate of twenty-five dollars per annum, and every retailer of opium or coca leaves or of any compound, manufacture, salt, derivative or preparation thereof, shall pay to the said collector a special tax at the rate of one dollar per annum. Every person who imports opium or coca leaves or any compound, manufacture, salt, derivative or preparation thereof, shall be regarded as an importer thereof. Every person who exports opium or coca leaves or any compound, manufacture, salt, derivative or preparation thereof, shall be regarded as an exporter thereof. Every person who engages in the cultivation of the poppy plant, in the United States of America, for the production of opium, shall be regarded as a producer thereof. Every person who engages in the cultivation of the coca plant, in the United States of America, for the production of coca leaves, shall be regarded as a producer thereof. Every person who refines, purifies, manufactures, or compounds with other drugs, opium or coca leaves, or any salt, derivatives or preparation thereof, for sale only to manufacturers, wholesalers or retailers, shall be regarded as a manufacturer thereof. Every person who sells opium or coca leaves, or any compound, manufacture, salt, derivative or preparation thereof, in unbroken importers' or manufacturers' packages for resale and not for consumption, or who sells in an individual transaction more than one ounce of opium, or more than one pound of coca leaves, or more than one-eighth of an ounce of morphine, or more than one-eighth of an ounce of cocaine, or more than one-eighth of an ounce of any salt or derivative of opium, or more than one-eighth of an ounce of any salt or derivative of coca leaves, or more than one pint of any liquid preparation, or its equivalent in solid or semi-solid preparations, of opium or coca leaves, or any salt or derivative of opium or coca leaves, or more than one hundred tablets or pills containing opium or coca leaves or any compound, salt, derivative, or preparation thereof, shall be regarded as a wholesaler thereof; *provided*, however, that any pharmacist who shall manufacture for sale in the ordinary conduct of the business of a retail pharmacy, or who shall sell, in any individual transaction, any of the articles

aforesaid to any other retailer or to any hospital or scientific institution registered under this act or who shall sell any of the articles aforesaid upon the written and signed prescription of any lawfully authorized practitioner of veterinary medicine when such prescription is issued in good faith for administration to an animal under treatment by the said practitioner in a quantity in excess of the quantities severally above specified, shall not be regarded as a manufacturer or wholesaler as herein defined. Every person, other than an importer, exporter, producer, manufacturer, or wholesaler, as herein defined, who sells, compounds, manufactures, distributes, dispenses or gives away opium or coca leaves, or any compound, manufacture, salt, derivative or preparation thereof, shall be regarded as a retailer thereof. Every person who pays the tax at the rate of twenty-five dollars per annum shall have the right to import, export, produce, manufacture, compound, deal in, distribute, sell or give away opium or coca leaves, or any compound, manufacture, salt derivative or preparation thereof, as an importer, exporter, producer, manufacturer, wholesaler and retailer, as herein defined, without the payment of any further special tax. Every person who pays the tax at the rate of one dollar per annum shall have the right to compound, manufacture, deal in, distribute, dispense, sell or give away opium or coca leaves or any compound, manufacture, salt, derivative or preparation thereof, as a retailer, as herein defined, without the payment of any further special tax. No person shall import, export, produce, manufacture, compound, deal in, distribute, sell, dispense, or give away opium or coca leaves, or any compound, manufacture, salt, derivative or preparation thereof, without having registered, and paid the special tax as required by this section; *provided*, however, that the registration and the payment of the tax as herein provided shall not be construed to relieve any person from the effect of any law of any State or Territory or of the District of Columbia or any lawful municipal ordinance regulating, prohibiting or taxing the manufacture, transportation, distribution, selling, or giving away of opium, coca leaves, their salts, derivatives or preparations.

The word "person" as used in this Act shall be construed to mean and include a partnership, association, company, or corporation, as well as a natural person. That all provisions of existing law relating to special taxes, so far as aplicable, including the provisions of section thirty-two hundred and forty of the Revised Statutes of the United States are hereby extended to the special tax herein imposed.

Sec. 2. That no person shall sell, or give away opium or coca leaves, or any compound, manufacture, salt, derivative or preparation thereof, except upon a written order of the purchaser or person to whom such article is given, on a form to be issued in blank for that purpose by the Commissioner of Internal Revenue; and every person who shall accept any such order and shall sell or deliver any of said articles thereunder shall preserve such order for a period of two years in such a way as to be readily accessible to inspection by internal revenue officers and the state and municipal officials mentioned in Section nine of this Act. Every person who shall give an order as aforesaid for any of said articles shall, at or before the time of giving such order make or cause to be made a duplicate thereof on a form to be issued in blank for that purpose by the Commissioner of Internal Revenue, and in case of the acceptance of such order shall preserve such duplicate for said period of two years in such a way as to be readily accessible to inspection by the officers and officials aforesaid. Nothing contained in this section shall apply to the distribution or dispensing of any of said articles by lawfully authorized practitioners of medicine, dentistry or veterinary medicine in the course of their professional practice only, or to the sale, distribution or dispensing of any of said articles by pharmacists, under and in pursuance of written prescriptions of lawfully authorized practitioners of medicine, dentistry or veterinary medicine, in personal attendance upon the case for which the prescription is intended and such prescription shall be signed by said practitioner; or to the sale to the consumer on an affidavit setting forth that the same is desired for his personal use as a medicine and not for resale or distribution to others, on a form approved by the Commissioner of Internal Revenue and supplied to the consumer by the retailer, which affidavit shall be forwarded, on or before the tenth day of the month next succeeding, to the Collector of Internal Revenue in his district, and a copy of which shall be pre-

served for a period of two years and open to inspection by internal revenue officers or other officers referred to in Section nine of this Act; or to the sale, exportation, shipment or delivery of any said article by any person within the United States of America, to any person in any foreign country, or to the sale, distribution or dispensing of preparations or remedies which do not contain more than two grains of opium, or one-fourth of a grain of morphine, or one-third of a grain of heroin, or one grain of codeine, or their salts or derivatives, in one fluid ounce; or if a solid or semi-solid preparation, in one avoirdupois ounce; or to liniments, ointments, or other preparations which are prepared for external use only; *provided,* that such remedies or preparations are sold, distributed, or dispensed as medicine, and not for the purpose of evading the provisions of this Act. The Commissioner of Internal Revenue, with the approval of the Secretary of the Treasury, shall cause suitable forms to be prepared for the purpose aforesaid. Such forms shall be furnished to collectors of internal revenue for sale by them to those persons who shall have registered and paid the special tax, as required by this Act, in their districts, respectively, and no collector shall sell any of such forms to any person other than a person who shall have registered and paid the special tax, as required by this Act, in his district and such form shall not be transferable. The price at which such forms shall be sold by said collectors shall be fixed by the Commissioner of Internal Revenue, with the approval of the Secretary of the Treasury, but shall not exceed the sum of fifty cents per hundred. Every collector shall keep an account of the number of such forms sold by him, the names of the purchasers and the number of such forms sold to each of such purchasers.

Sec. 3. That there shall be levied and collected upon all opium and coca leaves now held by any importer, exporter, producer, manufacturer, wholesaler, or retailer, as herein defined, or hereafter produced or received, an internal-revenue tax of five cents per pound or fraction of a pound on opium, and one-quarter of a cent per pound or fraction of a pound on coca leaves, in addition to any import duties on these products; and said revenue taxes shall be paid by affixing to each package or receptacle containinng opium or coca leaves before removal of the same from a customs warehouse, their place of manufacture or storage, or before being further manufactured or compounded, and before being offered for sale, an engraved stamp, to be affixed and cancelled in such manner as the Commissioner of Internal Revenue, with the approval of the Secretary of the Treasury, may prescribe.

That the provisions of existing laws governing the engraving, issue, sale, accountability, effacement, cancellation and destruction of stamps relating to tobacco and snuff, as far as applicable, are hereby made to apply to the stamps provided for by this section; and all opium and coca leaves, and all packages and receptacles containing the same, not stamped as herein provided, shall be forfeited to the United States and may be sold subject to the provisions of existing law, to any person who has registered and paid the special taxes imposed by this Act; *provided,* that whenever packages of opium or coca leaves, after the payment of the internal-revenue tax thereon, shall be subdivided, further manufactured, or compounded, such sub-divisions, compounds, or manufactures may be sold or otherwise disposed of without any internal-revenue tax tamp being affixed to the packages or receptacles containing the same.

Every person registering under the provisions of this Act, shall, at the time of such registration, file with the collector of internal revenue of the district, a sworn statement showing to the best of his knowledge and belief the number of pounds of opium and coca leaves, in his possession at the date when this Act went into effect, and the said collector shall collect the revenue taxes on such opium and coca leaves at the rate of taxation as provided for by this section.

Sec. 4. That there shall be levied and collected upon all of the following described articles hereafter imported from foreign countries, to-wit, all manufactures, compounds, salts, derivatives, preparations and further manufactured products of opium or coca leaves, in addition to any import duties on said articles, an internal-revenue tax at the rate of two and one-half cents per ounce. The payment of said internal revenue tax shall be evidenced by affixing an engraved stamp to each package or receptacle containing any of the said articles, which stamp

shall be affixed and cancelled by the owner or importer of the said articles while they are in the custody of the proper custom-house officers, and such articles shall not pass out of the custody of said officers until the stamps have been affixed and cancelled; and the owner or importer shall be liable to the penal provisions prescribed by this Act. Whenever it is necessary to take any such articles, so imported, to any place for the purpose of repacking, affixing and cancelling such stamps, other than the public stores of the United States, the collector of customs of the port where they are entered shall designate a bonded warehouse to which they shall be taken, under the control of such customs officer as he may direct. And every officer of the customs who permits any such articles to pass out of his custody or control without compliance by the owner or importer thereof with the provisions of this section relating thereto, shall be deemed guilty of a misdemeanor, and shall be fined not more than five thousand dollars, or imprisoned not more than three years, or both, in the discretion of the court. The provisions of existing laws governing the engraving, issue, sale, accountability, effacement, cancellation and destruction of stamps relating to tobacco and snuff, as far as applicable, are hereby made to apply to the stamps provided for by this section and all such articles hereafter imported, to-wit, all manufactures, compounds, salts, derivatives, preparations and further manufactured products of opium or coca leaves, and all packages and receptacles contained the same, not stamped as herein provided, shall be forfeited to the United States and may be sold, subject to the provisions of existing laws, to any person who has registered and paid the special tax as required by this Act.

Sec. 5. The Collector of Internal Revenue may, in his discretion, require monthly or quarterly reports from any or all producers, importers, exporters, manufacturers, wholesalers, or retailers of their purchases of opium, coca leaves, their salts, derivatives or preparations, and from whom received during the preceding three months, but said reports shall not be required to cover a period longer than the preceding three months, which said reports shall be filed in the office of Collector of Internal Revenue for reference as herein provided.

Sec. 6. That it shall be unlawful for any person who shall not have registered and paid the special tax as required by Section one of this Act, to ship opium or coca leaves, or any manufacture, compound, salt, derivative or preparation thereof, from any State or Territory or the District of Columbia, to any person in any other State, Territory or the District of Columbia; or for any person, in any State or Territory or the District of Columbia, who shall not have registered and paid the special tax as required by Section one of this Act, to receive from any other State or Territory or the District of Columbia or any foreign country, in original unbroken packages, any opium of coca leaves, or any manufacture, compound, salt derivative or preparation thereof; *provided,* however, that nothing contained in this section shall apply to common carriers engaged in transporting opium or coca leaves, or any manufacture, compound, salt, derivative or preparation thereof, or to the sale or delivery of any of said articles to consumers in pursuance of written and signed prescriptions of lawfully authorized practitioners of medicine, dentistry or veterinary medicine for the treatment in good faith of patients upon whom they are in personal attendance.

Sec. 7. That under such regulations and upon the filing of such notices, entries, and bonds, as the Commissioner of Internal Revenue, with the approval of the Secretary of the Treasury, may prescribe, opium or coca leaves, or any manufacture, compound, salt, derivative or preparation thereof, may be removed from a customs warehouse, or from the place of manufacture or storage, for export free of the revenue taxes imposed by Sections three and four of this Act; but upon the reimportation of any of said articles the same shall be held in the custody of the collector of customs until the required internal-revenue stamps in payment of the taxes imposed by this Act shall have been placed thereon.

Sec. 8. That any person who violates or fails to comply with any of the requirements of this Act shall, on conviction, be fined not more than two thousand dollars, or be imprisoned not more than five years, or both, in the discretion of the court.

That whenever on trial for violation of this act an unregistered person is shown to have, or to have had possession of any opium, coca leaves, their salts, derivatives or prepations not expressly excepted in sections two

and eleven of this act, after this act shall have gone into effect, such possession shall be deemed sufficient evidence that he is engaged in the unlawful traffic in such opium, coca leaves, their salts, derivatives or preparations unless such possession shall be explained to the satisfaction of the jury.

Sec. 9. That the returns of importers, exporters, producers, wholesalers and retailers filed in the office of the collector of the internal revenue district under Section five of this Act shall be open to inspection by internal revenue officers and such officials of any State or Territory or of any organized municipality therein, or of the District of Columbia, as shall be charged with the enforcement of any law, or municipal ordinance, regulating the sale, dispensing, dealing in, or distribution of opium or coca leaves, or any manufacture, compound, salt, derivative or preparation thereof. Each Collector of Internal Revenue is hereby authorized to furnish, upon written request, certified copies of any of said returns filed in his office to any of such officials of any State or Territory or organized municipality therein, or the District of Columbia, as shall be entitled to inspect the returns aforesaid filed in the office of the said Collector of Internal Revenue, upon the payment of a fee of one dollar for each one hundred words or fraction thereof in the copy or copies so requested. Any person who shall disclose the information contained in the said returns, except as herein expressly provided, and except for the purposes of enforcing the provisions of this Act, or for the purpose of enforcing any law of any State or Territory or the District of Columbia, or ordinance of any organzed municipality therein, regulating the sale, dispensing, dealing in, or distribution of opium or coca leaves, or any compound, salt, derivative or preparation thereof, shall, on conviction, be fined or imprisoned as provided by Section eight of this Act. And collectors of internal revenue are hereby authorized to furnish, upon written request, to any person, a certified copy of the names of any or all persons who may be listed in their respective collection districts as special taxpayers under the provisions of this act, upon payment of a fee of one dollar for each one hundred names or fraction thereof in the copy so requested.

Sec. 10. That the sum of one hundred and fifty thousand dollars, or so much thereof as may be necessary, be, and hereby is, appropriated for the purpose of carrying into effect the provisions of this act, and the Commissioner of Internal Revenue is hereby authorized to appoint such agents, deputy collectors, inspectors, chemists, assistant chemists, clerks, and messengers in the field and in the Bureau of Internal Revenue in the District of Columbia as may be necessary to enforce the provisons of this act.

Section 11. That the provisions of this act shall not apply to decocainized coca leaves, or preparations made therefrom, nor to other preparations of coca leaves which do not contain cocaine.

Sec. 12. That all laws relating to the assessment, collection, remission, and refund of internal-revenue taxes, including sections thirty-one hundred and sixty-four to thirty-one hundred and seventy-seven, Revised Statutes; thirty-one hundred and seventy-nine to thirty-two hundred and forty-three; thirty-three hundred and forty-six as amended; thirty-four hundred and forty-five to thirty-four hundred and forty-eight; thirty-four hundred and fifty to thirty-four hundred and sixty-three, all inclusive, so far as applicable to and not inconsistent with the provisions of this Act, are hereby extended and made applicable to the taxes imposed by this Act.

Sec. 13. That all the provisions of the Act of Congress approved June thirtieth, nineteen hundred and six, entitled "An Act for Preventing the Manufacture, Sale or Transportation of Adulterated or Misbranded or Poisonous or Deleterious Foods, Drugs, Medicines, and Liquors, and for Regulating Traffic therein, and for other purposes," and any amendments thereof, and of that Act approved February ninth, nineteen hundred and nine, entitled "An Act to Prohibit the Importation and Use of Opium for Other than Medicinal Purposes" and any amendments thereof, are hereby extended and made to apply, so far as applicable, to the provisions of this Act.

Report on the Progress of Pharmacy

For the Year 1912

Eleventh Installment.

Swiss Ergot of 1911.—A. Vatter gives the following data. Ergot is found most abundant on dry and sunny places 700 to 900 meters above sea level. That on winter rye is small and more uniform than on summer rye. Swiss ergot of 1911 was of excellent strength, running from 0.16 to 0.220% alkaloids by the Keller assay. The therapeutical action of the fluidextract from 1911 ergot was better than that of the harvest of 1910.—Schweiz. Wschr. f. Chem. u. Pharm., L. (1912), No. 25, 377. H. V. A.

The Vine in Culture and Medicine.—An interesting historical review of G. Ekert, of the grape, the wines prepared therefrom and the products of the vine other than wine that have been used in medicine. Among the products cited are raisins, currants, oil of grape seed, the sour juice (or omphacium), extract of young shoots and tendrils and "lacrimæ vitis," the sap exuding in spring from the wounded stalk.—Schweiz. Wschr. f. Chem. u. Pharm., L. (1912), Nos. 25 and 26, 369 and 385. H. V. A.

Masticulating Agents.—F. Berger gives historic review of various substances used as "masticatoria" by ancients, primitive people and also at present time. He quotes list of chewing agents published by Hahn in 1839, who groups these into those of acrid taste like pellitory and tobacco; burning taste like ginger and mustard seed; aromatic, like cloves and mastic; tonic and astringent, like cinchona and rhatany; and deodorants, like roasted coffee and wood charcoal. He mentions the chewing of cloves by the Chinese since B. C. 220; of mastic by the Mohammedans; of coca by the Peruvians, and then gives special attention to the three great masticatoria used at the present time; tobacco, chicle, and betel nut. Of the latter he gives many interesting details.—Schweiz. Wschr. f. Chem. u. Pharm., L. (1912), Nos. 26 and 27, 389 and 401. H. V. A.

Llujta.—This is the Bolivian name of the alkaline material used by the coca chewers of the Andes, and represents the ash of Chenopodium Quino, coca stems, banana stalks or even burnt lime kneaded with potato (or some other starch) and water and dried.

A sample brought from Bolivia by Dr. Herzog has been examined by Hartwich and Wichmann, who find it in grayish tablet-like pieces about 10 cm. x 3 cm. x 4 mm. in size. The starch as shown under the microscope is from wheat; while qualitative analysis showed presence of potassium, sodium, magnesium, calcium, aluminum, iron, carbonates, chlorides, sulphates, phosphates and silicates. Titration showed an alkalinity of 0.968% (calculated as K_2CO_3), while the water insoluble part represented 22.32% $CaCO_3$.

Effect of Trypsin on the sprouting and growth of Plants.—A botanical investigation by Dr. Strujev, who finds that corn and sunflower seeds scarcely sprout in perfectly sterile artificial soils but will sprout if a trypsin solution is added. The proper strength of such solution is 2% and the proper amount is 0.5 to 2 cc. to each pair of seeds (the amount of nutritive fluid used not being stated). More than 2 cc. of the trypsin solution does not produce as large a plant as does 0.5 to 2 cc.—Schweiz. Wschr. f. Chem. u. Pharm., L. (1912), Nos. 29 and 30, 433 and 449. H. V. A.

Honey: Microscopic Examination.—Dr. C. Fehlmann shows the value in food analysis of the microscopical examination of honey as every natural honey contains pollen. Indeed from the character of the pollen one can determine the geographic source of the honey and even the time of year when stored by the bee. Of course, natural honey diluted with glucose will still show the pollen; hence the plan has its limitations. Besides pollen grains, the sediment from diluted honey shows starch grains; when the bees (in early

spring) are fed on meal and sugar, shows specks of ultramarine; when they have been fed on sugar, shows spores of fungi, when carelessly prepared. The paper closes with the kind of pollen found in natural honey obtained from different parts of Switzerland.—Schweiz. Wschr. f. Chem. u. Pharm., L. (1912), No. 11, 149. H. V. A.

Digitalis: Chemical Assay.—Dr. James Burmann, emphasizes the possibility of a chemical assay of this drug which will be at least as accurate as the total toxicity method of biological assay. He explains the difficulties of chemical assay due to diversity of glucosidal bodies found in digitalis and the uncertainty of which these glucosides produce the desired action, showing that by the Keller method it is not the true digitoxin which is estimated but another body which he (B.) calls pseudo-digitoxin. He points out the errors in the assays of Fromme and of Ecalle and summarizes precautions necessary to successful assay, all of which (for example, "Do not use rubber corks in distillation") are self-evident to the trained analyst. He then proceeds to give his method which unfortunately was performed only with a "Dialyse Digitale" in which he is presumably commercially interested. He mixes 100 gm. of this "dialyse" with 60 gm. absolute alcohol and after bringing the fluid to 190 gm. with 50% alcohol, adds 30 gm. solution lead subacetate (Sp. Gr. 1.240) and 30 gm. absolute alcohol. The precipitate of organic matter thus formed is filtered off and 125 gm. of the filtrate (representing 50 gms. of the "dialyse" after removal of lead with hydrogen sulphide is concentrated at not more than 50° C. to 50 cc., then made alkaline with 2 cc. 10% ammonia and shaken out with chloroform. The chloroformic extract is evaporated, is redissolved in 3 gm. chloroform, 7 gm. ether is then added and the glucosides are precipitated from this solution by addition of 50 gm. petroleum ether. This precipitate which is then dried to constant weight, is a white amorphous powder responding to all the reactions for digitoxin and on recrystallization from absolute alcohol solution by addition of a little water, shows under the microscope the crystalline rosettes of pseudo-digitoxin and the prismatic tables of true digitoxin. By fractional crystallization, Burmann has separated enough of the two glucosides to estimate the melting points which he finds to be 145°-150° and 247.5° respectively.

Comparing what he calls his "total assay" with the assay by the Keller method on the same dialysate, he deduces the amount of true digitoxin and gives the following table:

	I	II	III	IV
Total Assay..	0.152%	0.148%	0.118%	0.111%
Keller Assay.	0.118%	0.116%	0.091%	0.085%
Digitoxin ...	0.032%	0.032%	0.027%	0.026%

He has tested the accuracy of his scheme by running assays of the dialysate, to which he added definite amounts of Merck's crystalline digitoxin and finds that increased weight of the glucosidal mixture agrees with the weight of added digitoxin. The paper concludes with reports of biological assays of the dialysate and of the pseudo-digitoxin of Keller and the total digitoxin obtained therefrom|—Schweiz. Wschr. f. Chem. u. Pharm., L. (1912), No. 11, 153. H. V. A.

Tuberculous Sputum: Bacteriological Examination by the Antiformin Method.—Haass describes the rapid method of preparing tuberculous sputum for bacteriological examination by use of antiformin, which is the trade name for a mixture of solution of chromated soda and alkali. This mixture dissolves mucous, hair, wool, silk, nail tissue, keratin and is therefore an ideal fluid to dissolve the ingredients of the sputum other than bacteria. Moreover, while antiformin does dissolve some bacteria, the bacilli of tuberculosis are not dissolved; thus rendering its identification still easier. The manipulation consists of adding to 10 cc. sputum 20 cc. 10% antiformin, and after shaking, the mixture is warmed to 40° on water bath for one-half hour, or until completely homogeneous. Then add 5 cc. ligroin, shake vigorously and warm to 40° on water bath till the ligroin separates as clear layer, when a sample of the material at the point of contact of the two liquids is transferred on a platinum spatula to a cover glass and examined microscopically after staining. The article traces the history of the process and has a good bibliography.—Schweiz. Wschr. f. Chem. u. Pharm., L. (1912), No. 12, 174. H. V. A.

Antitrypsic and Meiostagmic Reactions.—M. C. Delenze explains these two types of modern diagnostic tests. The first is based on the fact that while the trypsin of normal

serum readily converts caseine into a form which will not precipitate with acids, the sera of cancerous patients does not thus affect alkaline caseine solutions.

The meiostagmic reaction is a comparison of the surface tension (as expressed in number of drops of fluid to a certain volume) of mixtures of the antigens on one hand and the anticorps on the other; the first being extracts from the diseased tissue while the latter are usually blood sera. The reaction is of service in diagnosis of syphilis, typhoid fever and tuberculosis.

The article gives details of manipulation of both reactions.—Schweiz. Wschr. f. Chem. u. Pharm., L. (1912), No. 13, 182. H. V. A.

Laminated Artificial Silk.—Dr. A. Verda discusses transparent cellulose which has recently come into the European market under such trade names as *gaudafil, aseptafil* and *cellamine.* It comes in thin sheets, impervious to water, oil and air but permits passage of steam. It can be used as a wrapping instead of parchment, as protective covering for wounds in place of taffeta or sheet gutta percha (since it can be sterilized) and as a dialyzing membrane.—Schweiz. Wschr. f. Chem. u. Pharm., L. (1912), No. 20, 301. H. V. A.

Quino-Quino Balsam.—Hartwich and Jama (Schweiz. Wschr. f. Chem. u. Pharm, 1909, Nos. 41 and 42), described this Bolivian balsam derived from Myroxlyon balsamum var. punctatum, while Riedel (Mentor, 1912, 33), describes a balsam supplied from the same plant, having distinctly different properties, Hartwich now discusses these differences and decides that while both were from the same tree, his was the exudation from the trunk while Riedel's was from the fruit.—Schweiz. Wschr. f. Chem. u. Pharm., L. (1912), No 21, 312. H. V. A.

Reactions of Hydrocoerulignone.—Taking as text a paper by J. Mair (Proc. Chem. Soc., London, 26, 115), on the above-named chemical, Professor E. Schär shows the similarity in its action on copper salts and hydrogen dioxide to those shown by guaiac with the same chemicals (Schär's Reaction). He, therefore, reviews his work, giving bibliography from 1868 to date and points out that when certain bodies yielding typical colors on oxidation (e. g. hydrocoerulignone, guaiac—resin, alum, pyragallol and guaiacol) are brought in contact with catalytic agents (such as copper ferrous and platinum salts, colloidal solutions of metallic gold and platinum) or peroxydases—e. g. blood pigments, malt enzyme, laccase and enzymes of acacia —and with a third substance (such as hydrogen peroxide, cyanogen compounds or even alkaloids or other feeble alkalies) the characteristic coloration occurs.

The presence of three types of chemicals is essential, any two of these producing no more than a faint coloration; and the oxidation (except when hydrogen dioxide is used) can be ascribed to the oxygen of the air. As to the hydrocoerulignone reaction,—the changing from green-yellow $C_{16}H_{18}O_6$ to red coerulignone $C_{16}H_{16}O_6$ when treated with hydrocyanic acid and copper sulphate—he points out that it can be used as a test for cyanides; for blood (controlling Schär's test) and for free alkaloids.—Schweiz. Wschr. f. Chem. u. Pharm., L. (1912), Nos. 22 and 23, 321 and 337. H. V. A.

The Fat of Roasted Coffee.—To prevent use of added fats in glazing roasted coffee, the Swiss food regulations direct that on maceration of the roasted bean with ether, the dried ethereal extract should not weigh more than 1.5%. Dr. Verda, of Lugano, shows that strongly roasted coffee (black coffee) preferred by the people of the Canton of Tessin gives considerably more than the above amount of extract; samples of Equador, Santos, Porto Rico and Salvadore coffee roasted by the writer to the shade of "blackness" preferred in Lugano yielded from 2.98 to 4.08% of ether extract. He, therefore, thinks that the present regulations are too severe and that rather than amount of ethereal extract, the refractive index of same should be considered.—Schweiz. Wschr. f. Chem. u. Pharm., L. (1912), No. 22, 326. H. V. A.

Eau de Cologne; Origin, Manufacture and Aging.—Dr. Hermann Prinz thinks the first manufacturer of this preparation was Johann Maria Farina, an Italian, who started the manufacture of cologne water, in Cologne on the Rhine, in 1709. The same firm still carries on business and by general consent of the mercantile and lay world, the bottles carrying its label are looked upon as containing "genuine" Eau de Cologne. The genuine article is acid in reaction, but alkaline and neutral Eau de Colognes are found in the market. Storing and aging vessels should be of

glass or well-seasoned, oak wood, spirit barrels. The alcohol must be free from fusel oil and a method is given for its detection. Only the best quality of essential oils are to be used and only distilled aromatic waters. The finished product should be left undisturbed for a year at least. Four formulas are given.—Nat. Drugg., January, 1912, 9-11. C. M. S.

Asafoetida: Adulterations—Plea for the Establishment of a Separate Standard for Powdered Asafoetida.—Asafoetida is one of the most grossly adulterated drugs imported into the country, says Arthur W. Reum, the foreign material giving high ash and small resin tests. Great variety of color is noticeable in the original cases, some tears are nearly white or cream color, others are brown and the whole mass frequently streaked and spotted with red and on some occasions blue dye. The light colored portions are soft and sticky and are commonly wrapped in coarse cloth or the skins of animals. The dark-colored portions are hard and brittle. Wood, gypsum and earthy matter may be found in the mass. Pieces of a root resembling sumbul, several inches long and from one to two inches in diameter, were found in some cases. Analysis made of a sample received in a granular condition, dark in color and very hard, gave an ash content of 65%, due to a large amount of mineral substance and only 11% of alcohol soluble resin. Six analyses of samples taken from original cases gave the following results:

	Alcohol Solubility	Ash
1	33.80%	10.8%
2	28.60%	.....
3	38.40%	9.5%
4	39.10%	14.7%
5	50.98%	31.0%
6	53.47%	28.4%

A fairly reliable method for the selection of a sample which shall represent accurately the resin and ash content is to select three or four samples, each comprising six to a dozen different parts of the entire mass. These samples may be well mixed and the assay made from the mixture or each may be assayed separately and the results averaged.

For the alcohol extraction, a weighed quantity may be placed on counter-balanced filter papers and washed with hot alcohol to exhaustion; the residue then dried and weighed. Or ten gm. of the drug may be placed in a shell and extracted in a continuous extraction apparatus and the dried residue then weighed. In grinding asafoetida, from 30% to 50% of drying material, such as starch, is added. This reduces alcohol solubility but does materially affect the ash. Ten assayed samples containing starch gave alcohol soluble material as follows: 17.5%, 37.4%, 22.1%, 19.3%, 20.7%, 23.8%, 18.8%, 19.3%, 11.3%, 14.5%. The ash ranged from 9.2% to 25.7%, with only two below 15%. It is not possible to have the powdered drug answer the requirements of the whole drug, hence it would be well to establish a special standard for the powder, it being extensively used in condition powders and stock foods. —Pac. Pharm., Sept., 1912, 118-119. C. M. S.

Ash Determination of Vegetable Drugs: Desirability of Acid Ash Determination and Uniform Method.—An editorial emphasizes the value of ash determination of powdered drugs, as an indication of quality and purity and points out the necessity of a determination of the acid insoluble ash, as well. The acid insoluble portion remaining after treatment of the ash with hydrochloric acid, showing practically the relative proportion of sand, dirt, etc., in the sample. Much attention has been given to the determination of ash content of drugs by many investigators, both foreign and in the United States, but without specifying methods. The true ash content of a drug is found when the sample is free of all foreign matter, for which reason a washed sample should be used. The cleansing process must, of course, be carried on with extreme care, that none of the tissue be carried away, that none of the salts of the drug be leached out or washed away and that no foreign salts be added. Rapid rinsing with distilled water in a wicker wire container would, no doubt, answer. The washed sample must then be dried to a constant weight at 100° C. Then the absolute ash content of the sample may be had which would serve as a comparative guide to the percent of inorganic impurities in the unwashed sample. Such examination following micro-analysis with chemical tests would well determine the quality and purity of the drug.—Pac. Pharm., Nov., 1912, 153. C. M. S.

Calcium Phenolsulphonate: Nature of Commercial.—Puckner, W. A., reports that, although calcium phenolsulphonate is a distinct chemical substance and is sold by sev-

eral manufacturers of chemicals, examination showed that the several brands differed considerably in composition and were unsatisfactory as to purity.—J. Am. M. Assoc., 1912, v. 59, p. 1157. M. I. W.

Magnesium Peroxide: Degree of Purity of.—Puckner, W. A., reports that while MgO_2 is advanced as a chemical formula for magnesium peroxide, examination in the laboratory showed that the several commercial brands contain only 12.17 to 25.18 percent of real magnesium peroxide.—J. Am. M. Assoc., 1912, v. 59, pp. 1157-1158.—M. I. W.

Digitalis: Duration of Clinical Action of.—Eggleston, Cary, reports a number of observations on the duration of digitalis action, and points out that this action may, and often does, persist for some considerable time after the administration of the drug has been stopped. He also states that the use of the term "cumulation" is a very loose one as at present it is being applied to widely different conditions. The general application is to express the development under small repeated doses of a drug of symptoms which are much more marked than those caused by a single small dose. In the case of digitalis cumulation would be the result of a simple summation of the amounts fixed and absorbed in the tissues, probably of the heart, and, owing to the firmness of this fixation, the intake is in excess of the elimination.—J. Am. M. Assoc., 1912, v. 59, pp. 1352-1357. M. I. W.

Oxygen: Action of.—An editorial (J. Am. M. Assoc., 1912, v. 59, p. 807), points out that while oxygen therapy has in some way or another entered into the experience of almost every physician, few have a real conception of the actual rôle which the gas plays. Some recently reported observations by Benedict and Higgins have established the fact that the inhalation of oxygen lowers the pulse rate. After the oxygen is stopped the pulse-rate at once increases and almost regains the original rate in fifteen minutes. M. I. W.

Magnesium Sulphate: Laxative Action of.—An editorial (J. Am. M. Assoc., 1912, v. 59, pp. 38-39), reviews some of the recently published literature on the laxative action of Epsom salts, and points out that the latest work on this problem appears to speak against any specific stimulating effect of magnesium sulphate on intestinal movement. The unique laxative property of certain of the salts presumably cannot be explained on the basis of any exceptional effect on peristalsis. For the present, therefore, Glauber's and Epsom salts may remain in the group of the saline purgatives which owe their efficiency to the difficulty which they present to the processes of absorption. M. I. W.

Thymol: As a Remedy for Tape Worm.—Allan, W., reports the use of thymol for *Taenia saginata*, and believes it to be a satisfactory remedy because it is cheap, requires no preliminary starvation or purgation, and is less expensive than pelletierine.—J. Am. M. Assoc., 1912, v. 59, p. 197. M. I. W.

Opium: Morphine in Smoke of.—An editorial (J. Am. M. Assoc., 1912, v. 59, p. 726), calls attention to the work by Pott of the Pharmacologic Institute in Freiburg, showing that morphine can be sublimed unchanged, and therefore can actually be present in opium smoke. Pott has succeeded in demonstrating that the action of smoked opium is due to the presence of undecomposed morphine in the smoke. M. I. W.

Wood Alcohol: Toxic Properties of.—An editorial (J. Am. M. Assoc., 1912, v. 59, pp. 200-201), points out that the widespread discussion which followed the series of deaths in Berlin as a consequence of the drinking of liquors contaminated with wood alcohol has again attracted attention to the scientific aspects of the toxicity of methyl alcohol. Observations recently reported appear to indicate that when reasonable doses of methyl alcohol are administered to animals the participation in metabolism scarcely exceeds three percent of the total exchange of material, and the elimination of methyl alcohol from the body is distinctly delayed, so that repeated ingestion of considerable doses of methyl alcohol may lead to a dangerous accumulation thereof in the body. M. I. W.

Sodium Chloride: Poisoning by.—Campbell, O. H., reports a peculiar case of common salt poisoning in a healthy boy of five years. The mother, believing that the child had worms, gave an enema consisting of a pound of salt in a quart of water. The enema was given at 5 p. m. and within ten minutes symptoms of poisoning were evidenced. The child complained of severe pains in the head, became intensely thirsty, vomited violently, and soon began to purge violently. Within thirty minutes the boy became unconscious

and had one convulsion after another. The symptoms increased steadily until 10 p. m., when the child died.—J. Am. M. Assoc., 1912, v. 59, p. 1290. M. I. W.

Sodium Chloride Poisoning.—An editorial (J. Am. M. Assoc., 1912, v. 59, p. 1297), calls attention to a second case of sodium chloride poisoning reported by Brooks (Arch. Int. Med., November, 1910, p. 577), in which the patient received about nine ounces of salt. M. I. W.

Pyramidon.—An editorial (J. Am. M. Assoc., 1912, v. 59, pp. 461-462), calls attention to the advertisements in newspapers of a new "headache cure," the advertising slogan of which is that it "contains no acetanilid or phenacetin." The name of the preparation is midol, and on examination it was found to depend essentially on pyramidon for its therapeutic effects. A second preparation of the patent medicine type in which pyramidon is the essential drug, is nurito. A quantitative examination indicates that the composition of this nurito is essentially as follows: Milk sugar, 34 percent; phenolphthaleim, 6 percent; and pyramidon, 60 percent. M. I. W.

Lead Poisoning.—Hamilton, Alice, in a discussion of industrial lead-poisoning in the light of recent studies, asserts that this is a disease with which the ordinary practitioner has very little familiarity. Plumbism is fairly common in industrial centers and not only causes permanent disability or death, but also decidedly influences the course of other diseases. Its importance is undeniable and the reason why it has escaped careful study is not apparent. Weyl's lead tabes is far from being a rare condition in this country, and instances of it can be found in every town where there are lead industries of a dangerous character.—J. Am. M. Assoc., 1912, v. 59, pp. 777-782. M. I. W.

Pyramidon Poisoning.—Bechet, Paul E., reports a case of extensive dermatitis medicamentosa, following the use of pyramidon in the "patent medicine" form of midol. The patient, a man aged 52, had been taking acetanilid for several years. After taking midol in full doses for four days, he began to have considerable pruritus and irritation back of the ears and on the neck, which within a few hours involved the trunk. The condition progressively increased, and at the end of three days there was an extensive erythematopapular eruption on the face, chest and back. There were also several itchy wheals which were over an inch in diameter. The patient was forbidden the use of midol and treated with an alkaline laxative mixture with local applications of magnesia and zinc oxide, and within three days the eruption had largely subsided.—J. Am. M. Assoc., 1912, v. 59, p. 1289. M. I. W.

Antiseptics: Influence on Intestinal Flora.—Harris, Norman M., reviews some of the work that has been done to determine the influence of antiseptics on the intestinal flora, and reports a series of experiments made by him at the request of the Council on Pharmacy and Chemistry of the A. M. A., with the object of testing the combined values of methods and drugs in the field of intestinal antisepsis. He concludes that in spite of so-called "favorable reduction," the results obtained by him plainly indicate that antiseptic drugs fail to kill off per gram of feces, millions of indol-producing bacteria, whose habitat is the large intestine. He agrees with Friedenwald and Leitz that regulations of diet, together with the evacuation of the bowels, is the most effectual method that we have on hand of reducing the bacterial content of the large intestine.—J. Am. M. Assoc., 1912, v. 59, pp. 1344-1349. M. I. W.

Enzymes: Descriptive Definition for.—An editorial (J. Am. M. Assoc., 1912, v. 59, p. 282), points out that enzyme and substrate, according to Fischer, bear a relation to one another like that of a key to its lock. Not all keys will open all locks. The configuration of the two factors must be appropriate. Decidedly forceful and unquestionably unique is the description of the distinctive peculiarity of enzymes lately published by the London physiologist, Professor Halliburton, in a primer intended for the general reader. "We may roughly compare an enzyme," he writes, "to an ill-disposed person who comes into a room full of good-natured people, and who succeeds in setting them all by the ears. He has produced a change in them without undergoing any change himself, by his mere presence. He is, moreover, able to repeat the process over and over again in fresh roomfuls ad infinitum." Perhaps the expression "enzyme" will now acquire a wider usefulness as a descriptive term for a not entirely unknown type of human being.

Iodides: *Effects of.*—Capps, Joseph A., discusses the use of iodides on the circulation and blood vessels in arterio-sclerosis. He reviews the several theories that have been propounded in connection with the action of iodides, and concludes that iodides in therapeutic doses are not active vasodilators and when long continued do not materially effect blood-pressure. They probably owe their beneficial influence in syphilitic arteriosclerosis to the absorption of the cellular exudate in the arteries.—J. Am. M. Assoc., 1912, v. 59, pp. 1350-1352. M. I. W.

Filterable Viruses: *Nature of.*—An editorial (J. Am. M. Assoc., 1912, v. 59, pp. 1459-1460), in commenting on a summary of the present status of our knowledge of the filterable viruses, points out that at the present time there are nearly thirty diseases of human, plant and animal life which have been demonstrated as being due to such viruses. Of those which affect man there are foot-and-mouth disease, rabies, vaccinia, variola, yellow fever, molluscum contagiosum, dengue fever, verruca vulgaris, trachoma, sand-fly or three-days fever, poliomyelitis, typhus fever and possibly measles and scarlet fever. These filterable viruses are probably so small as to be practically invisible and pass through the pores of a Berkefeld or a Chamberland filter, which will retain even very small cocci. M. I. W.

Poliomyelitis: *Transmission of.*—An editorial (J. Am. M. Assoc., 1912, v. 59, pp. 1380-1381), reviews some of the recent work on poliomyelitis, and calls attention to the observations of M. J. Rosenau which indicate that the stable-fly, *Stomoxys calcitrans,* plays an important part as a transmitter of this disease. The discovery that the stable-fly is an important agent in transmitting the disease will make it a comparatively easy matter to prevent infection and to open an avenue for the eventual control of this dread disease. M. I. W.

Waters: *The Relation of Interstate to the Spread of Disease.*—McLaughlin, Allan J., discusses the relation of interstate waters to the spread of typhoid, and points out that while the average death rates from typhoid fever per hundred thousand of population in European cities was 5.30 in 1909 and 4.50 in 1910, there is an aggregate total of 25 deaths per hundred thousand annually in the larger cities of the United States. He believes that more attention should be paid to the securing of pure drinking-water and to such treatment of sewage as is found necessary to prevent the spread of disease. J. Am. M. Assoc., 1912, v. 59, pp. 1425-1429. M. I. W.

Rats: *Necessity for Exterminating.*—Rucker, W. C., discusses the necessity for rodent extermination in American seaports, and points out that the rodent is the twentieth-century anachronism. He is as archaic as the neolithic midden to which he is coeval, and yet today we tolerate him, permit him to devastate our storehouses and to act as the intermediary vehicle for the transference of the organisms of disease between his loathsome carcass and the body of man. It has been necessary for plague to ravage the world many times before man has learned well the lesson that the rat and his confrères, the mouse and the ground-squirrel, are among the most deadly animals with which he has to deal.—J. Am. M. Assoc., 1912, v. 59, pp. 243-244. M. I. W.

Disinfectants: *Standardization of.* — An editorial (J. Am. M. Assoc., 1912, v. 59, p. 667), comments on the method of standardizing disinfectants with and without organic matter, and expresses the hope that the modified method proposed by Anderson and McClintic will be generally adopted, and that health officials and others having occasion to recommend or to purchase disinfectants will base their opinions on the efficiency, or otherwise, as demonstrated by this method. M. I. W.

Acetone: *Tests for.*—Rosenbloom, Jacob, points out that in the presence of protein, Lieben's and Gunning's test for acetone are negative and require the use of distillate for positive results. He also calls attention to the Frommer test which can be applied to the urine direct and does not react with diacetic acid if the heating is not carried too high.—J. Am. M. Assoc., 1912, v. 59, p. 445.M. I. W.

The Pharmacist and the Law

SCOPE AND APPLICATION OF THE FEDERAL FOOD AND DRUGS ACT.

Charles Wesley Dunn, Esq., Attorney-at-Law.

On April 7, 1913, the United States Supreme Court rendered a unanimous decision interpreting the Federal Food and Drugs Act of June 30, 1906, the practical significance of which can hardly be overestimated. Every manufacturer of and dealer in foods and drugs should carefully read this decision and note its operation on the conduct of his business.

The following brief analysis and explanation may serve to indicate the salient points of this decision of our highest court and its practical application.

The situation presented is as follows:

A wholesale grocer in Chicago, Illinois, shipped to a retail merchant in Oregon, Dane County, Wisconsin, a number of tin cans of "Karo Corn Syrup," enclosed in the usual wooden box or packing case. When the retailer received the goods at his store he took the cans from the box, placed them on the shelves for sale at retail and destroyed the wooden shipping box, as was customary. These cans were labeled to conform to the regulation made by the three Secretaries under the Federal Food and Drugs Act. The Wisconsin or state law, however, prescribed a different method of labeling for such a product, and permitted its sale or exposure or offering for sale only when so labeled, and the State labeling requirement conflicted with the Federal labeling requirement.

The question presented is: Must the labels on these cans, conforming to the Federal but not to the State law, be removed and the cans relabeled to conform to the State law before the retailer, *who was also the importer*, may lawfully sell or offer or expose for sale these cans at retail in Wisconsin?

The Supreme Court decides that the sale, and offering or exposing for sale of these cans by the importer, the retailer, is a part of interstate commerce within the purview of the Federal Food and Drugs Act. That inasmuch as the cans were labeled to conform to the Federal Food and Drugs Act, the Wisconsin law prohibiting the sale or offering or exposing for sale of these articles unless labeled in accordance with the Wisconsin Statute is an act in excess of its legitimate power and invalid.

To use the words of the Court:

"To permit such regulation as is embodied in this statute is to permit a State to discredit and burden legitimate Federal regulations of interstate commerce, to destroy rights arising out of the Federal Statute which have accrued both to the Government *and the Shipper*, and to impair the effect of a Federal law which has been enacted under the Constitutional power of Congress over the subject."

The court only condemns state laws which conflict with the Federal law which "impose burdens upon or discriminate against interstate commerce" and interfere with or frustrate the operation of the acts of Congress. The power of the State to make regulations concerning the same subject-matter, reasonable in their terms and not in conflict with the acts of Congress, is recognized and reaffirmed.

The points established by the decision are as follows:

1. Articles remaining in the possession of the importer, received by him in interstate commerce, are within interstate commerce until sold by him and are, until such sale, subject to the Federal act. It makes no difference whether the retail containers have been taken out of the packing box by the importer or not. It is sufficient if the articles remain *unsold* in the hands of the importer. The importer may offer or expose for sale and sell the articles and the State law cannot interfere, if the articles conform to the Federal law. The article would only be divested of its interstate character *after the first sale by the importer within the State into which it was imported.* Therefore, as in the case decided, a shipment (conforming to the Federal law) in interstate commerce to the retailer who resells or offers for sale to the consumer is protected by and subject to the Federal act and the State law cannot interfere with such sale or offering for sale by the retailer.

2. The immediate container of the article intended for consumption by the public is the container which must bear the required label-

ing statements. The brands regulated are on the packages intended to reach the purchaser or consumer. As the court well remarks—"This is the only practical or sensible construction of the act." The label is the means of vindication or the basis of punishment in determining the character of the interstate shipment dealt with by Congress. To limit these requirements to the outside packing box "would render the act nugatory and its provisions wholly inadequate to accomplish the purposes for which it was passed."

The court dismisses the contention that inasmuch as the cans had been removed from the boxes in which they had been shipped in interstate commerce, they had, therefore, under the "original package" doctrine, passed from the jurisdiction of Congress, by pointing out that Congress has expressly determined the operation of the Federal act in the act itself.

3. The Court finally determines that the purpose of the Federal law is to protect the consumer. "The object of the statute is to prevent the misuse of the facilities of interstate commerce *in conveying to and placing before the consumer* misbranded and adulterated articles of medicine or food." The making certain of the purpose of the Federal law is extremely timely and significant in view of the fact that one of the arguments insistently advanced against uniformity of the National and State laws is that the purposes of the National and State laws, respectively, are separate and distinct. *The purpose, in each instance, is the same,—to protect the consumer.*

WHAT THIS DECISION MEANS TO THE MANUFACTURER.

1. *If the manufacturer ships his products in interstate commerce to a retailer in another state,* and the retailer resells to the consumer, the products being labeled to conform to the Federal law, the whole transaction would be in interstate commerce, subject to and protected by the Federal law, and the State labeling law could not interfere.

2. *If the manufacturer ships his products in interstate commerce to a jobber in another state and the jobber resells to a local retailer* the situation would be different. The sale by the retailer, in this instance, would be subject to the State law. The first sale by the importer, the jobber, would be subject to the Federal law, but the resale by the retailer would be subject to the State law.

3. *If the manufacturer ships his products in interstate commerce to a jobber in another State and the jobber reships the whole or part of these products in interstate commerce to a retailer in another State,* and the retailer resells to the consumer the situation will be the same as in No. 1, above. The shipment by the manufacturer to the jobber is an act of interstate commerce and subject to the Federal law, as is also the first sale by the jobber, the importer, to the retailer, and the reshipment by the jobber to the retailer in another state is itself an act of interstate commerce, and subject to the Federal law, as is also the first sale by the retailer, also the importer, to the consumer.

4. *If the manufacturer sells his products to the wholesaler or retailer* in the State of manfacture, such sale would be subject to the State law.

It will be noted, therefore, that if the State law is not in harmony with the Federal law, but is particularly burdensome, local manufacturers may be placed in a decidedly unfavorable position, in competing with goods shipped into the State protected by the Federal law.

It will be noted, also, that shipments in interstate commerce direct to the retailer for sale in States where the local law is not in harmony with the Federal law are likely to be greatly increased.

It should be borne in mind that the question of *adulteration* is not considered in this decision. There can be no doubt that a question of adulteration would be determined as the court determines the question of labeling.

CONCLUSION.

The need for uniform laws now exists, as never before, *an imperative need,* to facilitate and equalize the various methods of distribution of foods and drugs. It is no longer a question of striving for a commercial Utopia, in the attainment of which we are pleased to lend our support, as a commendable movement, it is now a question of fact—not of theory—for manufacturers, a question concerning the conduct of their business. Unless the State laws are made uniform with the Federal law, manufacturers will be compelled to readjust the conduct of their business to conform to the present situation.

ABSTRACTS OF LEGAL DECISIONS.

MAILABLE MATTER—MEDICINES CONTAINING MORPHINE AND ALLEGED TO BE A CURE FOR MORPHINISM.—Section 217 of the Criminal Code provides that all poisons and compositions containing poison are non-mailable, but that the Postmaster General may permit mailing under such rules and regulations as he may prescribe "as to preparation and packing" of any article previously declared to be nonmailable which are not outwardly or of their own face dangerous or injurious to life, health, or property. A prosecution was brought under this section for the alleged misuse of the mails in furtherance of a scheme to defraud in mailing matter intended to advertise the sale of a compound containing morphine for the cure of the morphine habit. It was held by the Circuit Court of Appeals that the authority of the Postmaster General to prescribe regulations for the mailing of poison or compositions containing poison not outwardly or of their own face dangerous or injurious to life, health, or property was limited to regulations as to the "preparation and packing" thereof. Post Office Department Order No. 2,923, therefore, which was promulgated February 23 1910, and prohibits the mailing of medicines containing poison except for transmission in the domestic mails from the manufacturer or dealer to licensed physicians, pharmacists, and dentists when enclosed in packages conforming to conditions prescribed, was held to be outside the jurisdiction of the Postmaster General, and invalid, and the indictment could not be sustained.

There was evidence in the case that morphinism might be treated by gradually reducing the quantity taken until no morphine was required, but that a person addicted to the morphine habit would not be expected to cure himself because he had not sufficient will power to gradually reduce the amount taken, and that the substance in the hands of an unrestrained habitué, unassisted by a physician, would not tend to cure and could not possibly cure the habit. It was therefore held error to refuse to charge that the fraud was not in the fact that morphine was employed in the treatment of the habit, but in the fact that the substance was falsely represented to be curative in itself. It was also held to be error to refuse to charge that the fact that the substance was labeled "Poison" in unmistakable characters, and gave public notice of the fact that the substance did contain morphine, was evidence to be considered in behalf of the defendants on the question as to their purpose in selling it to habitual consumers of morphine, that the purchasers were not deceived with reference to the fact that the substance contained morphine, and that the defendants' conviction should not depend on the opinion of medical men that the substance was not curative of the habit, but that if the jury found that whether the substance was remedial in character when exhibited as part of the treatment of morphinism was merely a matter of opinion among medical men the defendants must be acquitted.

Bruce v. United States, C. C. A., 202 *Fed.* 98.

WARRANTY--FERMENTATION OF FRUIT-JUICE.—Action was brought by the purchaser to recover the purchase price of unfermented grape-juice sold with a warranty that the seller agreed to protect the purchaser against any fermentation. The plaintiff claimed that the defendant knew that it was proposed to use the grape-juice for the purpose of making soda water. This was denied by the defendant. Both parties knew that the juice was unconcentrated. The evidence showed that, when used to flavor bottle soda water, the soda water would sour in a short time, but just how soon did not appear. There was evidence that some mention was made at the time of the sale of using the juice as a flavor for soda water, but it was held that, in the absence of any evidence that the seller knew that the buyer expected to use it in making bottled soda water, or represented that when so used it would never ferment, this was not sufficient to give rise to an implied warranty that when so used it would not ferment. Testimony of witnesses familiar with processes of manufacturing and dealing in bottled unfermented grape-juice, that a warranty that unfermented grape-juice would not ferment while in sealed bottles, nor for a reasonable time after the bottles were opened, was held to be admissible as bearing on the intention of the parties.

Turlock Fruit-Juice Co., v. Pacific & Puget Sound Bottling Co., Washington Supreme Court, 127 *Pac.* 842.

INSECTICIDE ACT—MEANING OF "INERT."—In proceedings for the condemnation of a number of packages of "Roach Food" the question for determination was the meaning of the word "inert" in clause 3, par. 4, p. 8 of the Insecticide Act of 1910. That section provides that an insecticide, other than paris green or lead arsenate, shall be considered misbranded if it consists wholly or in part of "an inert substance or substances which do not prevent, destroy, repel or mitigate insects," unless the names and percentage amounts of such inert ingredients are stated on the label, or the names and percentage amounts of every ingredient having insecticidal properties and the total percentage of all inert ingredients are so stated. It was held that the word "inert," as so used, is not limited in meaning to a substance which serves no useful purpose in the compound, but includes any substance which is not in itself capable of killing or repelling insects, although it may be useful and used for the purpose of attracting them.

United States v. Thirty Dozen Packages of Roach Food, Maryland District Court, 202 *Fed.* 271.

CONDITIONAL SALE OF DRUG STOCK TO BE SOLD AT RETAIL.—A retail stock of drugs contained in a drug store was sold at the price of $2,000, to be paid in monthly installments of not less than $20 each, the stock to be sold by the purchasers at retail. On default of the purchasers to pay one of the installments, action of replevin was brought to regain possession of the stock. It was admitted by the parties that, through their mutual mistake, and the mistake of the scrivener who drafted the contract, a provision that the title should remain in the vendor until full payment of the purchase price, and upon default of the vendees the vendor should be entitled to possession, was omitted from the document. In considering the sufficiency of the complaint the court therefore treated this omitted stipulation as included. The contention in the case was as to the construction of the agreement. The seller contended that the contract made a conditional sale, and the ownership was his till the price was paid. The purchaser contended that the delivery of the goods with the provision that they should be sold by retail was inconsistent with a conditional sale; and that the title passed to the purchasers.

The court sustained the seller's contention. A sale of a stock of goods to be sold at retail authorizes the vendee to sell them in the regular course of trade at retail, and the purchaser will take title thereto. But where title is retained in the vendor, with the privilege to the vendee to sell the goods at retail, the sale of such a stock of goods in bulk is not authorized. It appeared that at least $200 worth of goods originally purchased under the conditional contract were still on hnad. As to that property, the vendor or his assignee was entitled to recover. As to the property after-acquired, the court expressed no opinion.

Andre v. Murray, Indiana Supreme Court, 101 *N. E.* 81.

ORDER FOR SODA FOUNTAIN—NECESSITY FOR ACCEPTANCE.—Action was brought for damages for the alleged breach of a contract for the sale of a soda fountain. The order was given to a traveling salesman of the seller, the order stating that the price was to be $300, payable by a cash payment of $25 and the balance in monthly installments, and that all orders were subject to the approval of the home office. The seller refused to accept it on the ground that the price should have been $350, and made out a new order at that price which the purchaser refused to sign, sending a check for $25, and demanding its return if his wishes were not acceded to. Pending negotiations, the seller cashed the check and subsequently sent the purchaser a draft for $25, which he cashed, writing the seller that he refused to accept it, but would sue for damages for failing to comply with the terms of his order. Upon the trial he claimed that he had credited the amount of the draft on his claim for damages. That was done, however, without the seller's consent. It was held that the clause as to the approval of the order by the home office was a reasonable one, and the order did not become a binding contract until such acceptance. No approval from delay could be inferred, and the plaintiff by his acceptance of the draft for $25 in effect rescinded his order. He was therefore held not entitled to damages.

Crowder v. Tolerton & Warfield Co., Supreme Court of Nebraska, 138 *N. W.* 151.

REGULATION OF SALE OF POISONS—LIMITATION ON POWER OF BOARD OF PHARMACY TO PROHIBIT SALE.—The validity of the conviction of a grocer of a violation of the California "poison act" of 1907, and of a resolution and regulation prescribed by the state board of pharmacy under and by virtue of certain provisions of the poison act by the sale of "ant poison," containing arsenic, was challenged. The poison act empowered the board to restrict or prohibit the retail sale of any poison by rules "not inconsistent with the laws of this state," and the schedule annexed to it contained a list at the head of which stood "arsenic, its compounds and preparations." The California pharmacy act of 1905 empowered the board "to regulate the sale of poisons." In 1909, section 16 of that act was amended, and it was provided that "the following drugs, medicines and chemicals may be sold by grocers and dealers generally without restriction." An enumeration of articles following concluded with "insect powder, fly paper, ant paper," etc., "when prepared and sold only in original and unbroken packages and labeled with the official poison labels." It was held that these acts were in pari materia, and must be harmonized, if possible, and that the board could not prohibit the sale of ant poison except by licensed pharmacists.

Ex parte Potter, California Supreme Court, 130 *Pac.* 721.

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ABSTRACT OF U. S. TREASURY DECISIONS.

T. D. 1843. STANDARDS FOR DETERMINING SPECIAL TAX LIABILITY.

The Office of the Commissioner of Internal Revenue has compiled the various rulings defining the standards used in determining special tax liability of manufacturers of and dealers in flavoring extracts, soda-water sirup, etc., containing alcohol, and alcoholic compounds containing medicinal ingredients.

Section 3246, Revised Statutes, exempts apothecaries from the payment of special tax "as to wines or spirituous liquors which they use exclusively in the preparation or making up of medicines." Under this section no special-tax liability is incurred on account of the manufacture or sale of essences, extracts, and soft drink sirups which contain no more alcohol than is necessary to cut the oils or extract the desired active principles and hold them in solution, provided such products are nonpotable in the condition as put out by the manufacturer.

In order for a manufacturer or dealer to be exempt under Section 3246 from special-tax liability for the manufacture or sale of an alcoholic compound containing drugs or medicines. (1) Alcohol: The preparation must contain no more alcohol than is necessary for extraction, solution, or preservation. (2) Medicaments: As the minimum dosage each one ounce liquid of the preparation must contain approximately an average U. S. P. dose for an adult of some drug or drugs of recognized therapeutic value, either singly or in compatible combination. The exemption only applies to such compounds when sold for genuine medicinal purposes, and such compounds, as U. S. P. jamaica ginger, for example, sold as beverages, would involve the seller in special-tax liability as a liquor dealer.

Manufacturers using a formula which calls for drugs sufficient to conform to the standard mentioned are advised by the Office to be very careful to see that the ingredients and processes used are such that the full strength called for by the formula is present in the product.

Apothecaries are permitted by Section 3246 to carry in stock distilled spirits and wines and to use same in the preparation of tinctures and other U. S. P. preparations, and in the compounding of bona fide prescriptions without special-tax liability, provided the spirits or wine is compounded prior to sale with drugs sufficient in character and amount to so change the character of the alcohol as to render it unsuitable for use as a beverage. If not so compounded special-tax liability is incurred, even if compounded on a physician's prescription and for purely medicinal purposes.

In general, the decision concludes, exemption from liability to special tax, on account of filling physicians' prescriptions, is secured to apothecaries by having the prescription itself specify the precise nature and amount of the ingredients to be added to the com-

pound, resulting in its being unfit for beverage purposes.

T. D. 1842. DENATURED ALCOHOL.

The Commissioner of Internal Revenue has granted permission to use specially denatured alcohol formula No. 19 (to 100 gallons of ethyl alcohol add 100 gallons of ethyl ether) in the preparation of a collodion backing for gelatin films.

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NOTICES OF JUDGMENTS UNDER THE FOOD AND DRUGS ACT, U. S.

No. 1869. *Misbranding of Succotash.* Burnham & Morrill Co., Portland, Me. Product prepared from soaked lima beans. Inconspicuous announcement. No claimant appeared. Condemned and forfeited. New Jersey.

No. 1870. *Misbranding of Cheese.* Davis Bros. Cheese Co., Plymouth, Wis. Container marked 23, indicating net weight of 23 pounds, actual net weight being 21.96 pounds. Undefended. Fine $25. Wisconsin E. D.

No. 1871. *Misbranding of Raspberry Vinegar.* Crown Cordial & Extract Co. Label indicated two dozen pints. Bottles contained 334 to 380 cubic centimeters. Decree consented to. Product released on payment of costs and filing of bond. Pennsylvania E. D.

No. 1872. *Adulteration of Tomato Catsup.* Huss Edler Preserve Co., Chicago, Ill. Products consisted in whole or in part of tomatoes containing yeasts, spores, bacteria, mold filaments, decayed tissue in excessive amounts, and bacterial debris. Product destroyed. New Jersey.

No. 1873. *Misbranding of Syrup.* Pacific Coast Syrup Co., Seattle, Wash. Label "Full Measure Tea Garden Drips—74% Sugar Cane Syrup—26% Corn Syrup Sugar." Units actually a mixture of sugar cane syrup and glucose, and did not contain 26% of corn syrup, but 30%. Product released on payment of costs and bond. Idaho.

No. 1874. *Misbranding of Cheese.* Ferbend & Co., Chicago, Ill. Deficiency in weight. Shortage of 60 pounds in 77 boxes, or average deficiency of 3.6 percent. Released on payment of costs and bond. Alabama S. D.

No. 1875. *Misbranding of Cheese.* P. J. Schaefer Co., Marshfield, Wis. Deficiency of 32 pounds, or average of 3.7 percent for 40 boxes. Alabama S. D.

No. 1876. *Adulteration and Misbranding of Orange Flavor.* H. C. Schrank Co., Milwaukee, Wis. Label "Soda Water Flavor Orange True Fruit." Product a dilute orange flavor and not a genuine orange flavor as label indicated. Plea of guilty. Fine $50. Wisconsin E. D.

No. 1877. *Adulteration and Misbranding of so-called Peach Cordial and Cherry Cordial.* John O'Donoghue, Washington, D. C. Product consisted of sugar solutions containing a small amount of alcohol, artificially colored and flavored with artificial peach flavor and artificial cherry flavor. Decree consented to. Released. Columbia.

No. 1878. *Adulteration of Tomato Paste.* Sachem's Head Canning Co., Guilford, Conn. Analysis: Yeasts and spores, 80 per one-sixtieth milligram; bacteria, 800,000,000 per gram; mold filaments in 95 percent of the fields. Plea of guilty. Fine $50. Connecticut.

No. 1879. *Misbranding of Evaporated Milk.* Cache Valley Condensed Milk Co. (Inc.), Logan, Utah. Label "Contents not less than 26 percent T. S., 7.5 percent B. F." Product contained considerably less than these proportions of total solids and butter fat. California S. D.

No. 1880. *Adulteration and Misbranding of so-called Apple Cider.* Arbita Spring Water Co., New Orleans, La. Product a compound of apple product, commercial glucose or impure starch sugar, sodium benzoate, and saccharin. No claimant appeared. Product destroyed. Texas U. D.

No. 1881. *Alleged Adulteration and Misbranding of Alexandria Senna.* J. L. Hopkins & Co., New York, N. Y. Analysis: Ash, 19.20 percent; ash acid insoluble, 9.15 percent. Verdict, not guilty. New York S. D.

No. 1882. *Adulteration and Misbranding of Damiana Elixir.* Mihalovitch Co., Cincinnati, Ohio. Analysis: Alcohol by volume, 29.03 percent; total solids, 10.37 percent;

sugars, 9.45 percent; non-sugar solids, 0.92 percent; very little or no damiana. Undefended. Fine $25 and costs.

No. 1883. *Adulteration of Olives.* Alco G. Psiaki Co., Brooklyn, N. Y. Examination showed: (Lot No. 1). Appearance fair; passable, 26, 32.0 percent; wormy, 6, 7.4 percent; worm-eaten, 26, 32.0 percent; decayed, 23, 28.3 percent; total 81, 99.7 percent. (Lot No. 2). Appearance poor; passable, 13, 15.4 percent; wormy, 3, 3.5 percent; worm-eaten, 36, 42.8 percent; decayed, 32, 38 percent; total 84, 99.7 percent. Plea of guilty. Fine, $20. New York E. D.

No. 1884. *Misbranding and Alleged Adulteration of Vinegar.* Place Bros., Oswego, N. Y. Label "Cider Vinegar." Product a dilute solution of acetic acid or distilled vinegar and a product high in reducing sugars and foreign mineral matter which had been prepared in imitation of cider vinegar. Misbranding found. Release on payment of costs and bond. Massachusetts.

No. 1885. Facts as in No. 1884.

No. 1886. *Misbranding of Cottonseed Meal.* Stockyards Cotton & Linseed Meal Co., Kansas City, Mo. Product invoiced as "C/S Feed Meal," a product which contains not less than 41 percent of protein. Each sack contained but 21.27 percent protein. Allegation admitted. Release on payment of costs and giving bond. Missouri W. D.

IT'S THE HAMMER THAT COUNTS.

What is advertising, anyhow? If you are marketing a new soap, can you place an advertisement in the magazines tomorrow which will sell your soap for the next ten years? Not with a single advertisement. Not if you paid a million for it and William Shakespeare wrote that advertisement. It can't be done. You would sell some soap tomorrow and the next day, and you might be selling a little soap ten years from now, all on the strength of that one advertisement. But your sales would be steadily falling off all the time, instead of steadily increasing, which latter condition is the one you want to bring about.

An office man loses his health through working sixteen hours a day, and worrying the other eight. He is assured that, by going to a gymnasium, he can win back his health. He is all enthusiasm and wants to work sixteen hours a day in the gymnasium, and get back his health right away. But he soon learns that it cannot be done in that way; that he can only work a few minutes each day in the gymnasium, and that to get results he must keep this up with the utmost regularity day after day. He finds that regularity is what counts, and that he must hammer at it, day after day.

So it is with advertising. It's the hammer, hammer, hammer that counts. We believe we are safe in saying that an advertising campaign should be always spread out. If you have ten dollars to spend, the point is that you will get better results by spending a dollar a week for ten weeks than by spending the entire ten dollars for one advertisement. You have to hammer at it. Shakespeare couldn't write an advertisment, a single insertion of which will continue to build business for ten years. On the other hand, a bright office boy can write an advertisement which will build business if you print it once a week for ten years. It's the hammer, hammer, hammer that counts.—*W. S. Adkins in National Druggist.*

Editorial Notes and Announcements

JAMES H. BEAL, Editor.....Scio, O.

All communications for insertion in the JOURNAL, or respecting advertising should be sent to the Editor.

The Association does not accept responsibility for the opinions of contributors. Offensive personalities must be avoided.

Under the rules of the Post Office the JOURNAL can be regularly mailed only to bona-fide paid subscribers. Subscriptions and association dues should be sent to the Treasurer, H. M. Whelpley, 2342 Albion Place, St. Louis, Mo.

Requests for back numbers, and claims for missing numbers should be sent to the Editor.

Claims for missing numbers will not be allowed if sufficient notice has not been given of change of address, and in no case if received later than sixty days from the date of issue.

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REPRINTS.

If the request is made at the time copy is submitted, authors will be furnished with not to exceed 50 reprints, without cover, of papers accepted for publication in the JOURNAL.

Larger numbers of reprints will be supplied by the Stoneman Press Co. at the following prices, provided the order is received before the type has been distributed:

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Orders for reprints may be sent either to the Editor, or to the Stoneman Press Co. Columbus, Ohio.

THE WOMEN'S SECTION.

There seems to be considerable discussion among the Branches concerning the Women's Section and its status in the A. Ph. A.

The women constituting the official board of the Section are actively at work in the preparation of the Constitution and By-Laws, and in outlining a program for the annual meeting, and are confident that the initial meeting will reveal the need for such work as will make the Section worth while.

The members at large, however, seem to be cudgelling their brains for a name for this addition to the A. Ph. A. family, forgetting that it was officially christened the "Women's Section" at the Denver meeting, and the women were so keenly appreciative of being at once fully received into the home circle that they will now steadfastly resist any attempt at this late date to reduce them to a mere auxiliary, an adjunct or something outside the intimate pale of the parent organization.

It has been suggested that because a majority of the members of the Section would not be eligible to membership in the Association proper, they should be allowed to affiliate as a "section." In refutation we call attention to the fact that in the House of Delegates, which really wields a power in shaping the Association's actions, there are many who are not members of the Association. Therefore any attempt to dislodge the women from their present position, in which they neither seek nor expect any dictatorial powers or voting privileges in the A. Ph. A. proper, would be discriminating against them.

The position of the women pharmacists who are eligible to and do now hold membership in the A. Ph. A., is a dual one. They are members of the A. Ph. A. and of the Women's Section also.

It has been stated that in some sections of the country there is considerable opposition to the employment of women pharmacists. If this be true, the Section has a good field to work on from the start. These women must be supported in their professional ambitions and the non-professional women of the Section will see their duty in bringing the men of their families to a realization that women are naturally endowed with the qualifications necessary to the successful

practice of pharmacy and will be an additional asset to any business employing them.

This opposition does not exist in the A. Ph. A. It has never ignored the women pharmacists. It may not have specifically invited the women in the profession to become members, but this is due rather to methods of soliciting membership than to any studied attempt to discourage women pharmacists. Its doors stand wide open to receive all the women pharmacists in the country into its organization on the same footing as its men members.

The surest and quickest way to overcome such opposition is for the women themselves to seek membership in the A. Ph. A., placing themselves on the same professional level as the men who are employers. What the A. Ph. A. as a whole recognizes as good timber cannot be intelligently opposed by its individual members.

Another work of the Section should be that of inducing all present organizations of women pharmacists to become affiliated with the A. Ph. A. and merge their local meetings with the local Branches. Pharmacy should not be divided against itself, and with the way pointed out the professional women will be quick to recognize the superior strength of the parent organization and that to maintain a separate organization is simply a duplication of effort.

Thus far the needs of the professional women are clear, and it will require all the aid the non-professional ones can give them to secure relief. When this shall have been accomplished, the Association will benefit by the closer organization of the men and women in pharmacy and by an increased membership.

The needs of the non-professional members are not quite so clear, and it is expected that when the Section once gets into convention there will be more ideas and suggestions from the fertile brains of these women than the Section can take care of in the year's work. There are, however, many phases of the drug business in which the non-professional women are deeply interested, in fact all those problems in the trade which bear so closely on the home life, and it is in solving these that the professional women—with their clear understanding of store conditions—will be able to return the assistance given them by their sisters.

The work of the section then will fall into two grand divisions; the professional and non-professional, but a moment's thought will reveal so many points of common interest, so many places where mutual help will bring mutual results, that the dividing line between the two will be obliterated and these women will be united in a sisterhood which is bound to mean much for the good of pharmacy.

Finally, the Women's Section does not want to be an auxiliary, or subsidiary organization, but it does want to be an intimate working part of the A. Ph. A. It hopes to build its organization so substantially and to become so true a helpmeet that it will be the one indispensable "Section" of the A. Ph. A.

ADELAID M. GODDING, President.
ANNA G. BAGLEY, Secretary.

The Bulletin Board

RESPECTING THE A. PH. A. OFFICIAL HOME.

BROOKLYN, N. Y.

Replying to your circular letter in reference to permanent official headquarters, I fully agree that the American Pharmaceutical Association should have a home for a complete and up-to-date library as well as for a laboratory where proposed formulas may be tested.

I sincerely hope that American Pharmacy will be able and willing to meet the expenses of erecting and equipping the structure in question.

Very respectfully yours,
(MRS.) CLARA A. DIEKMAN.

PHILADELPHIA.

Answering your circular letter, will state that it seems to me desirable for the American Pharmaceutical Association to have a permanent home. And I am impressed with the thought that no more appropriate place could be found for such a home than the city of Philadelphia, the home of William Procter, the Father of Pharmacy.

The Philadelphia College of Pharmacy has for some time past hoped to secure a site upon the Parkway (leading from the City Hall to Fairmount Park). If their an-

ticipations in this matter are realized, I have no doubt but what adjacent property could be secured suitable for your purpose. The Parkway will possibly be one of the handsomest thoroughfares in America, and the location of your home adjacent to the oldest college of pharmacy in the United States, would, in my opinion, be most fitting. I hope that you and the other active members of the Association will use their best efforts to locate their home building in Philadelphia.

Truly yours,

HOWARD B. FRENCH.

INDIANAPOLIS.

The proposed home for the American Pharmaceutical Association which is to contain a well-equipped laboratory and fireproof apartments for preservation of the archives of the Association, appeals to me as an effort in the right direction.

The work of the A. Ph. A. is of much importance to the pharmaceutical profession in this country, and an adequate workshop should add materially to its efficiency.

When you are ready to solicit subscriptions, send me a blank. Very truly,

J. G. MUELLER.

RICHMOND, VA.

I am in receipt of your circular letter addressed to dear fellow member, and I have read the circular letter with much pleasure and if the American Pharmaceutical Association can see its way clear to have permanent official headquarters where experimental laboratories could be maintained for the working out of National Formulary and U. S. P. problems, it would be a great advantage, and I sincerely hope the officers of the Association will be able to see their way clear to have such a building for their permanent headquarters.

With kind regards, I remain,

Yours respectfully,

E. D. TAYLOR.

LAWRENCE, KAN.

In response to your recent circular letter, kindly record mine as an affirmative vote for a permanent "Official Home" for the A. Ph. A. The desirability of such a home can hardly be questioned. It must be evident to everyone acquainted with the work of the committee of revision that a permanent laboratory, thoroughly equipped for working out problems of the U. S. P. and National Formulary, is an absolute necessity. These books cannot go for another decade without revision. Yearly supplements should be issued. But that can be done only by having a permanent workshop for those who carry on the work. The *need* for continuous revision of the U. S. P. and National Formulary is apparent when we consider for a moment the rapidly changing and developing sciences which form the foundations for these books. It is a safe statement, I think, that the Pharmacopœia has not made as much progress in the past twenty-five years as it should make in the next five. This lack of progress is owing largely to the conditions under which the Committee on Revision carries on its work.

The other objects enumerated in the circular are all worthy, and as a matter of course would be a part of such an undertaking. But to my mind the most valuable feature of the undertaking would be to furnish permanent laboratories for continuous work on the National Formulary and U. S. P.

With best wishes for the success of the enterprise, I remain,

Very truly yours,

CHAS. M. STERLING.

NEW YORK.

I am heartily in favor of the idea of erecting an Association home that will be a perpetual monument to American Pharmacists and American Pharmacy. The thought is a grand one, and should meet with the earnest cooperation, and untiring support of every thoughtful pharmacist throughout the land. An institution of this kind has long been found a necessity, but the courage to foster it has been lacking. Now that it has been created in the minds of our people, let it take shape and become a realization in fact.

With best wishes for success, I am,

Yours truly,

F. E. NIECE.

BOSTON.

Your circular in regard to "Need of an Association Home" is received, and in reply will say that there are only three points, as I see it, to be considered in regard to such a proposition.

The *first* point is—is such a home needed? To this question I personally will answer *yes*.

The *second*—can we afford to build such a home? This question, I think, can be very

properly answered by those who have a thorough knowledge of the finances of our Association at the present time, and the possibilities for the future.

The *third*—the location of the home. It seems to me desirable that such a home should be not over 250 miles distant from Washington. My reason for this statement is that I believe our permanent Secretary should be, at all times, in touch with various legislative matters which are bound to affect us in the future and which, in my opinion, will multiply rather than diminish in the years to come.

With my kindest regards, I remain,

Yours very truly,

JAMES F. FINNERAN.

DOW CITY, IOWA.

Your letter at hand and I am very much in favor of having a home for the A. Ph. A. established, and I don't see any reason why we can not have same with the large membership which we have. Hoping to see this matter brought up at Nashville if not before, I remain, Respectfully,

I. A. ANDERSON.

MIDDLETOWN, N. Y.

I fully realize that the creation of an Association Home, for the A. Ph. A., is a work which will require very careful planning, and quite a readjustment of the affairs of our Association. I also realize the advantages which will follow such a step, and I have full confidence in the ability of the American Pharmaceutical Association to build wisely and properly for the future, as it has always done in the past.

I therefore give my vote in favor of the proposed project. Yours very truly,

WILLIAM H. ROGERS.

LA FAYETTE, IND.

In reply to your recent circular letter, asking for an expression of opinion as to the desirability of a permanent home for the American Pharmaceutical Association, am pleased to say that I am very much in favor of establishing such a home for the use of the Association.

I hope, that at the next annual meeting a plan will be submitted and adopted, which will enable all members and others as well to contribute towards, and assist in, making the Association Home a reality.

Yours very truly,

JOHN J. SCHULTZ.

HOLDREGE, NEB.

I am glad to note the agitating of an official home for the American Pharmaceutical Association, fully equipped for the working out of all problems connected with the work of the Association and the protection of all of its records, papers, books, etc., in fireproof vaults. Keep up the good work; it is bound to come. Yours, etc.,

D. J. FINK.

FRUITVALE, CAL.

We need badly such a home and laboratory to keep alive pharmacy for the retailer and to help him in his many problems that he can not well turn over to the wholesaler and to the manufacturer.

I think with this and with the many able pharmacists, assisted by the colleges and their newly-graduated enthusiasts could do much to show the medical profession that all the new work does not come from the manufacturing pharmaceutical houses.

I do not for a minute wish to depreciate the good work that they are doing, but I think sometimes they are prone to make the M. D. believe that they are alone in the uplift and betterment of pharmaceutical progress. If we have such a laboratory that we all can send our work and ideas to and get answers that will help us and also show us our mistakes it will be a great help.

While I believe in the commercial training and feel it is of utmost importance today, still I feel that the ethical need not be as dead as others think it should be.

Yours cordially,

W. BRUCE PHILIP.

ST. LOUIS, MO.

This is the first opportunity I have had since receiving your communication to make my reply to your request.

I certainly approve heartily of your views on the Association home and trust that your plans are not visionary ones only, but that the whole Association in the not far distant day will take up the idea and put it successfully through.

The need of a fireproof building to protect the Association's property, of an irreplaceable character and of great interest to the Association's future being and work must be very apparent to any thinking member.

The installation of laboratories for investigations and research work in the inter-

est of pharmacopœial and National Formulary work and trying out the character of proposed preparations would be a decided step in the right direction and no doubt would result in giving us better formulas and better preparations.

FRANCIS HEMM.

GRAND RAPIDS, OHIO.

I consider it a most excellent movement on the part of the A. Ph. A. to establish an Association home and would suggest that it be built in Ohio and at the Ohio State University, provided the trustees of said university cooperate with the American Pharmaceutical Association and furnish the location for the building on the university grounds.

Special chemical and pharmaceutical work could be carried on by members of the Association and with this location they would have the advantage of having access to both the university and state libraries.

Very truly yours,

AZOR THURSTON.

TUSCOLA, ILL.

Your circular letter in reference to the Association home is received. I am heartily in favor of the project, indeed, the pharmacists of the United States owe it to the efforts of those who have given their time to provide such a home.

I would like for the American Pharmaceutical Association to own a home similar to that owned by the Chemists' Society in New York, provided it can be properly maintained.

The American Pharmaceutical Association is a scientific body of ample importance and influence to be entitled to a "home" in keeping with its scientific attainments, and, if possibly secured, would be a well merited monument to the earnest work of those who have so generously made the Association what it is.

Other societies have their homes, why not ours? Others of much less importance have their library, etc., and I think it is time ours make efforts to provide for these things.

Very truly yours,

M. F. STACY.

CHICAGO, ILL.

Answering your circular letter would state that the writer is very much in sympathy with the movement towards the establishment of an Association home. In fact he does not even think that the members should be called upon, but the Federal authorities should establish same and practically maintain it. The cause of Pharmacy should be given the same attention, if not more, than a good many other cults, if I may use the expression, that are now being favored.

Hope the movement will have such an active impetus as to be carried through at an early date. Should be glad to work with that object in view, and remain,

Very truly yours,

PETER VAN SCHAACK & SONS.

C. P. VAN SCHAACK.

ANN ARBOR, MICH.

I read your article, "The Need of an Association Home," with great interest. It expresses ideas about a permanent headquarters with properly equipped laboratories for experiments and research for A. Ph. A., that I have entertained for many years and occasionally expressed, but passed them by as fond hopes not to be realized in the near future.

Your editorial is timely. The A. Ph. A. has arrived in its activities and usefulness at a point where it has become almost peremptory for a departure as you outlined, if it is to grow and develop to still greater effectiveness and importance as a leader and promoter of Pharmacy as a profession. The erection of a permanent home as you suggest would bring the importance of the Association, as a factor, for the welfare of the nation, to the attention of many who are not aware of its existence. Of prime importance would be the assurance that it would give the A. Ph. A. as a permanent institution, to carry out the objects of the Association with more prestige. Provided with well-equipped laboratories it would in a short time make the home the center of Scientific Pharmaceutical research and experiment in this country and an inexhaustible source of practical and useful information for its members and investigators. This proposition ought to attract every Pharmacist, and many Doctors of Medicine, to such an extent that they become members of the A. Ph. A. to help along a great undertaking. I hold myself ready to donate for a fund as a starter and hope that your suggestion may meet with unreserved approval in and out of the ranks.

Wishing speedy development, I am,

Very truly yours,

OTTMAR EBERBACH.

MISSOURI PHARMACEUTICAL ASSOCIATION.

The Missouri Pharmaceutical Association will celebrate its thirty-fifth anniversary at Pertle Springs, June 10-13. This will be the thirteenth meeting at that charming summer resort in the suburbs of Warrensburg.

The reading and discussion of papers, particularly of a practical nature, will be the leading feature of the convention. Professor Leo Suppan, Century Bldg., St. Louis, is Chairman in charge.

President H. O. A. Huegel, St. Louis, is working for an unusually large attendance. He has appointed William Mittelbach, Boonville, Sam Farrar, Lebanon, and J. E. Koppenbrink, Higginsville, as members of the Advisory Committee of the National Druggists' Home, Palmyra, Wis.

Treasurer William Mittelbach reports over 100 applications for membership on hand.

F. W. Robinson, Warrensburg, is local Secretary to whom application should be made for information about local arrangements.

The Travelers' Association will have charge of the entertainment. William F. Kahre, 11 South 4th St., St. Louis, is Chairman of the committee.

The round trip over the Missouri Pacific Railway from St. Louis is $8.95. The prevailing rate throughout the state is about two cents per mile. Inquiry should be made of local agents.

St. Louis and Kansas City will use special cars for the trip.

The Missouri Board of Pharmacy will hold a meeting for the examination of candidates for registration, Monday, June 9. Those desiring to take the examination should notify Secretary Charles E. Zinn, 300 West 9th St., Kansas City, a week in advance of the meeting.

A special rate of $2.00 per day has been made by the Hotel Minnewawa.

President Huegel extends a hearty invitation to pharmacists in neighboring states to be present at the meeting. For further information regarding the Association, address Permanent Secretary Henry M. Whelpley, 2342 Albion Place, St. Louis.

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WASHINGTON STATE PHARMACEUTICAL ASSOCIATION.

The Washington State Pharmaceutical Association will hold its annual meeting at Scenic Hot Springs, Washington, June 23, 24 and 25. Special rates at the hotel and on the railroad will prevail.

Scenic Hot Springs is justly celebrated for the natural beauty of its surroundings, and is an ideal place for a summer outing.

Though a comparatively young member in the family of States, Washington is already noted for its able pharmacists, and for its active State Association. Its members apparently realize the importance of securing appropriate pharmaceutical legislation before outside interests gain such a foothold as to make it difficult to do so.

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PENNSYLVANIA PHARMACEUTICAL ASSOCIATION.

Forest Park Hotel, Forest Park, Pa.,
June 24-25-26, 1913.

The thirty-sixth annual meeting will be held at Forest Park, Pike County, Pa., June 24, 25 and 26, 1913, and every member should do what he can to make this a better meeting than any the Association has ever held. To attain this object will require more aggressive work than many of our members have ever done, but it can be accomplished if everyone will help a little, and, that, too, in the face of the fact that the Association has been noted the country over for its valuable practical meetings, and for the number of excellent papers presented each year for discussion.

In order that the meeting may produce something that will prove of value to every member present, as well as to every member who reads the Proceedings, your Committee of Papers and Queries solicits original papers on all phases of pharmaceutical knowledge and practice—Scientific, Educational, Legislative, Commercial, Historical, and particularly on Practical Pharmacy and Dispensing.

Merely as suggestions for those who have no definite subject in mind, upon which they wish to write, we are submitting a list of subjects and propositions which have been submitted by various members to whom we sent appeals for help in compiling the list. Surely every member should be able to find something in this list upon which he can write at least a note, if not a long paper. The value of a paper does not depend upon its length, and it often happens that our shortest papers stir up vastly more valuable discussions than

the more lengthy papers. A dozen or more short notes on such subjects as Numbers 1, 4, 17, 18, 20, 43, 45, 46, 48, 49, 52, and others, would make the sessions in which they are read of exceeding interest and value. The pharmaceutical circles of the country are watching our Association because of the work it has done in the past, and we must not disappoint them by "falling down" on our work. We need not "fall down" if those who have contributed papers in other years will do so again this year, and if those who have never sent a paper will send in one or more this year.

LIST OF QUERIES.

1. The advantages accruing from taking a yearly inventory, and best methods for taking an inventory of a retail drug store.
2. Sterilization by the pharmacist—U. S. P. and N. F. requirements.
3. A satisfactory formula and perfume for liquid soaps for toilet use.
4. Time-savers in bookkeeping.
5. To what extent is the tinfoil used for wrapping food stuffs and confectionery contaminated with Arsenic?
6. What is the best process for making Elixir of the Phosphates of Iron, Quinine and Strychnine?
7. What new expedient can be devised to prevent poisoning through the mistaking of Corrosive Sublimate tablets for ordinary tablets used in medicine, numerous cases of such nature being reported from time to time?
8. What are the advantages and disadvantages of replacing the Syrup in the official Syrup of Hydriodic Acid with Glycerin, either wholly or in part?
9. What are the advantages of drug store experience while attending college lectures?
10. Should a preceptor aid a student in acquiring practical knowledge of the drug business, or should the student be allowed to depend upon himself for "picking up points?"
11. Oregon Balsam: A paper on this subject is wanted.
12. The Lead Number Test for Asafetida.
13. The detection of Cane Sugar in Honey.
14. Assay of Fluidextract of Cinchona.
15. Difficulties in the assay of alkaloidal extracts.
16. The Ignition Test for Magnesium Carbonate.
17. Original formulas and suggestions for N. F. and U. S. P. preparations are wanted.
18. What difficult or unusual prescriptions have you recently encountered, and how did you succeed in compounding them?
19. Give detailed formulas and methods for exploiting any "own-make" preparations which have proven successful for you.
20. What factors are to be taken into consideration in arriving at the exact cost of the prescription?
21. Collection, preservation, chemistry and action of the venom of the Rattle Snake (Crotalus horridus).
22. The Sale of Oxygen by the pharmacist—the most satisfactory mode of handling.
23. How can the trade in household remedies, flavoring extracts, toilet preparations, etc., now lost to the retail pharmacist by reason of the forming of soap-buying clubs, be partly regained?
24. How can the colleges of pharmacy, the State Pharmaceutical Examining Board and the pharmaceutical associations of the State of Pennsylvania successfully cooperate to better the status of pharmacy in this State?
25. Why should, or should not, the proposed A. Ph. A. Home be located in the State of Pennsylvania? Why should, or should not, the Home be located in Philadelphia?
26. The new man in a new neighborhood—what losing policies should he avoid, and what gainful policies should he adopt in his efforts to draw trade to his store?
27. The importance of keeping close "tabs" on market conditions.
28. The folly of cutting prices on a staple article simply because, by quantity or combination buying, one is able to secure a lower price than his competitors.
29. Is Extemporaneous Pharmacy on the wane? If so, what is the cause?
30. To what extent is Fusel Oil used for Heavy Oil of Wine?
31. What is the quality of the Pancreatin on the market?
32. To what cause may we trace the enormous increase of prescription writing during the past decade?
33. How should a first-year high school pupil demonstrate that he has absorbed 15 Regent counts' worth of knowledge?
34. A demonstration is wanted to show why many graduates in pharmacy, some having had as much as three terms of instruction, are unable to distinguish between Buchu and Uva Ursi, between Podophyllum and Belladonna Root, between Cinnamon Water and Infusion of Digitalis.
35. How can the pharmacist meet the standardization requirements of the U. S. P.?
36. Define what is meant by "Profession of Pharmacy."
37. Is there not a pressing need in our colleges of pharmacy for a larger amount of Practical Work, so that a graduate who has made a good record in his examinations, may be able to make a good smooth ointment, a creditable emulsion, a thoroughly mixed and evenly divided lot of capsules, a decent batch of suppositories,—in general, to show greater competency to combine drugs and handle apparatus than he usually does?
38. Should not our colleges of pharmacy insist that their graduates be better prepared as business men, so that at least the ordinary operations of charging, crediting, posting, and making out a bill may be understood?
39. Is there any need for the long hours maintained in the drug business? Does it not make many druggists one-sided and nar-

row-minded? Is it not driving out and keeping out of the business young men of superior ability? Cannot the hours be at least much shortened? Is there justification any longer for keeping open all day Sunday when hundreds of druggists are now closing at least half of the day?

40. What explanation can be given for the deterioration in the quality of drug clerks of late years, aside from their knowledge of pharmacy?

41. Does the certificate of a Q. A. really amount to anything as showing its holder's ability, or is it only a mere makeshift, backed by interested parties, to get around the law?

42. Is the small attendance at most pharmaceutical meetings due to lack of interest or to lack of time? Would not shorter store hours make far better attendance at such meetings?

43. Best-paying side-lines for the average drug store.

44. Preliminary education which a prospective pharmacist should have.

45. Advantages and disadvantages of buying in large quantities.

46. Advantages and disadvantages of giving window space for telephone booths.

47. The value of the luncheonette as an adjunct to soda business.

48. Five months of parcel post and how it has affected my business.

49. If you have made a pronounced success of some department of your business, will you not tell your brother pharmacists how you "turned the trick?"

50. Newspaper advertising for the retail pharmacist—profitable and unprofitable.

51. Some of the "skin games" that have been tried on me.

52. Is it good policy to push proprietary brands of U. S. P. and N. F. preparations?

53. Should not druggists use greater care in displaying confectionery for sale?

54. Peroxides and perborates in toilet preparations—their use, value and legal status.

55. Who are our competitors?

56. Should the minimum pharmacy course extend over three years?

57. What degrees should be conferred on the completion of 2, 3, and 4 year courses in a College of Pharmacy?

Certain funds belonging to the Association have been invested, and of the proceeds $20 in gold are awarded each year as a prize for the most meritorious paper, pharmaceutical apparatus or original device presented at the annual meeting.

Even though you may not find it possible to attend the meeting, send in a paper and it will be published in the Proceedings, with the result that someone will profit by your kindness, you will have contributed toward keeping the Association where it has stood for years—at the head of the list for the number and value of its original papers.

Kindly notify the Chairman as promptly as possible what is to be the subject of your paper or papers, and then send the paper or papers to him in time to have them properly classified and assigned to a place on the program.

FREEMAN P. STROUP,
Chairman Committee on Papers and Queries.
145 N. Tenth St., Philadelphia, Pa.

Proceedings of the Local Branches

"All papers presented to the Association and its branches shall become the property of the Association, with the understanding that they are not to be published in any other publication than those of the Association, except by consent of the Committee on Publication."—By-Laws, Chapter X, Art. III.

Reports of the meetings of the Local Branches should be mailed to the editor on the day following the meeting, if possible. Minutes should be *plainly* written, or typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter.

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CINCINNATI BRANCH.

The meeting of April 8th was opened by President J. U. Lloyd, who was greeted by the members, their families and friends, among whom were a number of students of the Cincinnati College of Pharmacy.

After a brief business meeting, President Lloyd introduced the speaker of the evening, Dr. A. O. Zwick, who, in a masterly manner, presented his lecture on "The Oldest Pharmacœia in the World." This lecture was profusely illustrated by means of stereopticon views and has been delivered by Dr. Zwick in a number of cities in America.

The lecturer takes you back in a delightfully fascinating way to about 7000 years B. C., showing pictorially and proving that the ancient Egyptians and other peoples had even in that time quite advanced ideas regarding the practice of medicine and the administration and employment of drugs and various medicaments. He shows how the gradual deciphering of the hyroglyphics found upon stone and papyrus prove the Egyptians to have been adepts in the art of healing.

Dr. Zwick also called attention to the more modern developments in medicine by showing

the pictures of such noted scientists as Jenner, Pasteur, Koch, Ehrlich and quite a number of others, and their contributions to science.

At the conclusion of the lecture, Dr. Zwick was warmly thanked by President Lloyd on behalf of the Branch, and he feelingly referred particularly to the last picture presented, a likeness of Dr. Zwick's father, recalling him as a warm personal friend and as an able pioneer pharmacist.

The next meeting of the Branch will be held May 13, 1913, at which time a lecture on "Serum Therapy" will be presented.

CHAS. A. APMEYER, Secretary.

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CITY OF WASHINGTON BRANCH.

The April meeting of the City of Washington Branch of the American Pharmaceutical Association was called to order, Wednesday, April 16, 1913, at 8:15 p. m., by Dr. Lyman F. Kebler, President, at the National College of Pharmacy, Washington, D. C.

Routine business was immediately dispensed with, and Dr. Kebler, with very fitting remarks, introduced Dr. F. V. Coville of the Bureau of Plant Industry, Department of Agriculture, whose subject was entitled, "The Influence of Soil upon Plant Culture."

Dr. Coville explained that while the particular line of work he was now doing was in fruit culture—adapting the blueberry or huckleberry to cultivation, experiments were being made at the same time along the same lines with regard to several drug plants, notably Gaultheria procumbens. He explained his first observations with these plants in New Hampshire, and how when he came to experiment with them he was surprised to learn that the alkaline soil, which is so essential to most plant culture, produced puny huckleberry plants, and absolutely no success in their culture could be obtained with such soil. Further observations showed that these plants thrived both in sandy uplands and in bogs, but in nearly all cases, in a soil composed of decayed laurel and oak leaves. This lead to experiments with such soil as was found near the plants, leading to the discovery that it was strongly acid. It was found, however, that soil composed of such leaves of six or seven years' decay had become alkaline and plants either died or remained neutral therein. Further experiment showed that oak and laurel leaves are very acid when they first fall, almost as much so as the lemon juice, but after four or five years the acidity ceases and an alkalinity is produced, due to the large percentum of calcium present in their composition (2 to 3 percent calculated as CaO).

Extensive experiments are now being carried on with a soil mixture of nine parts upland peat, one part sand, and one part broken porous pots. Remarkable results are being obtained, plants eighteen months old producing berries 11/16 of an inch in diameter. It is believed that this size can be increased to ¾ inch, and that with the remarkable production which experiments indicate will be attained, much of the barren pine lands of New Jersey and other places can be successfully used in the production of this berry.

Dr. Coville went into great detail in explaining the characteristics of certain fungi associated with this plant, which are found on all healthy specimens, but which do not seem to alter or change the composition of the plant in any way.

The adaptability of this acid soil to the culture of many plants now generally considered hard to raise, has been clearly shown, and this knowledge, it is believed, so Dr. Coville stated, will lead to more successful cultivation of numerous drug plants.

A discussion of the peculiar phases of this industry, in which Mr. Bradbury, Mr. Grant, Dr. Leet, and others took part, followed.

Dr. Kebler then introduced Dr. Leet, assistant to Dr. J. T. Anderson in the Hygienic Laboratory, Public Health Service, who took Dr. Anderson's place in presenting to the branch the subject, "Controlling the Manufacture of Sera, Vaccines, and Antitoxins." Dr. Anderson sent his regrets at being unable to attend, but on account of his work in connection with the tests being made of Dr. Friedman's "turtle virus," he had to be out of the city. Dr. Leet proved a most capable substitute and a most excellent spokesman, handling his subject in a most interesting manner.

He first pointed out the provisions of the law, the Act of July 1, 1902, by virtue of which these products came under the control of the Public Health Service. He then described the methods of use, i. e., by subcutaneous, cutaneous and intravenous injection,

then the character of each product, i. e., toxins, antitoxins, viruses, vaccines, and sera; also the corruption of the name, vaccine, which should be applied only to smallpox vaccine. The improvement in vaccine points he remarked had been wonderful since the passage of the law controlling their manufacture. Before its passage, sore arms were the majority, now, a very small minority. The production of a standard product having become compulsory to manufacturers, more constant results are now being obtained. The absence of tetanus spores in vaccine points had promptly resulted, but before the time of the law they were found present in a large percentum of points that were examined. The abolition of dry points has also reduced the contamination remarkably, glycerin proving a fairly good preservative, but too much dependence must not be placed in the glycerin as an antiseptic.

He pointed out how toxin (diphtheric) had passed through the round of 500 rabbits, the symptoms in the last following administration from a portion of the brain of the 499th had been identically the same as those of the first, second, third, and all between them.

The Units of the Hygienic Laboratory were carefully described and the manner of their restoration in cases of destruction outlined. The manner of inspecting laboratories was also detailed. Dr. Leet stated that each laboratory was subjected to an annual inspection without forewarning, that samples of its products must be submitted every two months, and that inspectors bought (in addition to these latter) other samples from the open market.

He described the preservation of each product, showing conclusively that material loss within the time limit can be prevented by keeping each product properly chilled. The use of phenol and tricresol as preservatives was explained, and the reason for the limit of phenol to ¼ percent and of tricresol to ½ percent he attributed to the kidney effects of larger percentums.

Tetanus and diphtheric antitoxin work is required by law to be done in separate laboratories under the existing law, Dr. Leet stated, and it is now compulsory to slaughter all animals used in this work.

In answer to questions, Dr. Leet defined a virus as the term is now generally accepted, as a culture of bacteria too small to be seen by a microscope, and admitted that none of the samples of these products which had been examined had been found wholly free from contamination, further, that experiment showed that such contamination increased, usually, with poor preservative methods.

Further discussion by Messrs. Polkin, Grant, Bradbury, Albrecht, Flemer, Hilton and Richardson, and Drs. Kalusowski, Chestnut, Emory, Kebler, and Motter, brought out further information as to the standards of these products as compared with those of chemicals and drugs, and a discussion of the merits of the Phylacogens, now so much advertised followed.

The thanks of the Branch, it was moved, seconded and carried, should be extended to Dr. Coville and Dr. Leet for their most excellent contributions, and such motion was directed to be made a part of the record.

Upon motion of Dr. Hilton, seconded by half a dozen members, the sincere and deep sympathy of the Branch was extended to Mr. M. I. Wilbert, in his long illness, with the hope that a speedy recovery would be his good fortune. Mr. Hilton was then appointed a committee to send flowers to him, and then the meeting was adjourned.

Plans are being made to hold the May meeting at the Drug Gardens, Arlington Experimental Farm, (Department of Agriculture), Alexandria County, Virginia, on May 24, 1913, at 2 p. m. The cordial invitation of the Branch is extended to all who wish to attend.

HENRY B. FLOYD,
Secretary.

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NEW YORK BRANCH.

A regular meeting of the New York Branch of the American Pharmaceutical Association was held April 14, beginning at 8:30 o'clock in the evening.

President C. O. Bigelow presided.

The minutes of the March meeting were read and approved.

The report of Treasurer Joseph Weinstein was received as read.

For the committee on membership, Louis Berger presented applications from five persons, as the result of a letter sent to each member of the Branch.

Reports for the committee on education and legislation were made by John Roemer and Prof. W. C. Anderson. Mr. Roemer told of the progress of the several pharmacal measures in the State legislature. Prof.

Anderson reported that the Owen bill for a federal health bureau had been reintroduced in Congress, mentioned several other congressional measures of interest to pharmacists, and related in detail the consideration recently given to the formulation of a national anti-narcotic law. A new State law providing regulations for the collection of samples was read by the Secretary. Legislative matters were discussed by Messrs. Diekman, Hatcher, and Raubenheimer.

Mr. Bigelow stated that the chairman of the committee on fraternal relations, Peter Diamond, had reported that he was unable to put forth any effort toward a meeting with the county medical society. It was the general opinion that it was too late in the season to attempt a joint meeting, and it was decided to let the matter rest for the present.

For the committee on the progress of pharmacy, Dr. G. C. Diekman gave brief abstracts of the following contributions to recent European literature: "The Detection of Fixed Oils in Balsam of Peru," "The Adulteration of Oil of Camphor," "The Detection of Oil of Camphor in Oil of Turpentine," "The Value of Protargol Substitutes," "Differentiation between Maltol and Salicylic Acid," "Use of Oil of Eucalyptus in Scarlet Fever and Measles," "Stability of Tincture of Iodine," and "Wall Paper and Linoleum Responsible for Arsenical Poisoning." Dr. Diekman also made some reference to the plan for the Eleventh International Congress of Pharmacy and recounted some recent legal decisions of interest to pharmacy.

Prof. H. V. Arny called attention to the unsatisfactory manner in which the Association's report on the progress of pharmacy is received by the members since the discontinuance of the annual proceedings and the succeeding Year-Book, with the publication of report in installments in the journal of the Association. This matter was discussed by Messrs Diekman, Murray, Raubenheimer, Coblentz, and Roemer. It was the consensus of the speakers that the existing method of issuing the report on the progress of pharmacy was far from satisfactory; that the chemical abstracts of the American Chemical Society in no way took the place of the former report; and that some way of getting the report in its one-time convenient shape was desirable. The following preamble and resolution, offered by Prof. Arny, was unanimously approved:

The members of the New York Branch of the American Pharmaceutical Association hear with much regret that the council of the American Pharmaceutical Association has rescinded the motion passed at the Richmond meeting of 1910, directing the publication of the Report on the Progress of Pharmacy as a separate bound volume and that the plan now proposed is to publish the report piecemeal in the issues of the Journal of the American Pharmaceutical Association. The members of the New York Branch consider such treatment of the report a serious error and have therefore passed the following resolution which is submitted to the council through the general secretary:

Resolved, That the New York Branch of the American Pharmaceutical Association request the council of the American Pharmaceutical Association to reconsider its vote, directing the publication of the Report on the Progress of Pharmacy in monthly installments in the Journal and that the council be further requested to publish the report in a separate bound volume as agreed upon at the Richmond meeting.

The paper of the evening was "Observations on the Keeping Properties of Digitalis and Some of Its Preparations," by Robert A. Hatcher, M. D., and Cary Eggleston, M. D. This paper, which was read by Doctor Eggleston, was interesting, instructive, and to a great extent iconoclastic. Opening with a review of the voluminous literature on the subject of the deterioration of digitalis, with particular reference to the conclusion of Focke, Hale, and several earlier investigators, the authors soon set about to prove from their own careful physiological experimentation that digitalis and its preparations are much more stable than is generally believed. Their experiments included many market brands of the leaf and fluidextract, tincture, infusion, acetic acid fluidextract, and some of the much-advertised "fancy" preparations. Specimens of leaf and fluidextract almost and quite thirty years old were examined among many and found to have deteriorated at the low rate of about 1½ percent a year. This rate of deterioration was found to be about normal for digitalis and its hydro-alcoholic preparations, even though the restrictions of Focke regarding moisture were not heeded. It was the conclusion of the authors that much of the failure with preparations of digitalis, particularly the infusion, was due to incompleted extraction of the drug. He has ad-

vised the use of a finely-powdered leaf for extraction purposes. The weight of their experience supported the tincture as the most reliable preparation. They had found that the acetic acid preparations were unsatisfactory and very unstable.

In summing up in reply to various questions that followed the reading of the paper, Dr. Hatcher and Dr. Eggleston expressed the following views:

Most long-accepted ideas regarding digitalis are foolishness, and the acceptance of this folly has resulted in a neglect of the study of this drug.

The belief in the rapid deterioration of the drug under normal conditions is nonsense, and no physician can tell even approximately the age of a specimen. Their thirty-year-old fluidextract was better than the average fresh one.

There is, according to Hale, no difference in potency of the leaves of the first or second year's growth. The German leaves are a little better than the English, and the wild Bohemian leaf is the most potent.

The frog test method is not a criterion of the therapeutic value of digitalis.

Digituratum was described as "an extract of digitalis minus a myth," reference being made to the opinion that the digitonin was the nauseating body in digitalis.

The tincture and the infusion, if made from the finely-powdered leaf, represents more than ninety-nine percent of the total activity of the drug.

There is no real reason for preferring the infusion, the action of the two preparations is identical and the tincture is more stable.

It was necessary to neutralize the acid in testing the acetic acid fluidextract, because the acid killed the cats used as the test.

Digalen is not what it is advertised to be, but probably an aqueous solution of digitalein, and is prone to deterioration.

Excessively large doses of the fat extracted from digitalis would not produce vomiting in the cat so that the nauseating effect of digitalis is not due to the fat; it is a characteristic of the drug and unless nausea be present the full effect of the drug is not obtained.

The discussion of the paper was an indication of its value and of the interest had by members of the branch in the important subject with which it was concerned. The branch expressed its appreciation of the work of Drs. Hatcher and Eggleston in a rising vote.

Adjournment was taken at 11:05 o'clock.

HUGH CRAIG, Secretary.

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CHICAGO BRANCH.

The Chicago Branch of the American Pharmaceutical Association devoted its April meeting, which was held at the University of Illinois School of Pharmacy on Tuesday evening, April 15, to an exhibit of lantern slides. Through the kindness of Mr. E. G. Fine of Boulder, Colorado, the slides exhibited by Mr. Fine at the Denver meeting were loaned to the Branch and were shown at this meeting. Professor Clark discussed these slides briefly and then showed a number of colored slides prepared from his photographs taken in the vicinity of Buffalo and Elk creeks, Colorado. These were followed by some slides from Nashville, which were loaned by Local-Secretary J. O. Burge. The meeting was well attended and the program a pleasant one.

E. N. GATHERCOAL, Secretary.

Council Business

COUNCIL LETTER No. 12.

PHILADELPHIA, April 1, 1913.

To the Members of the Council:

Motions No. 20 (*Petition to form Cincinnati Branch A. Ph. A.*) and *No.* 21 (*Election of Members; Applications Nos.* 98 *to* 117, *inclusive*), have each received a majority of affirmative votes.

The Committee on Memorial to Oscar Oldberg report as follows:

"IN MEMORY OF OSCAR OLDBERG.

We, the Council of the American Pharmaceutical Association, would bear testimony to the irreparable loss suffered by American Pharmacy in the death of Oscar Oldberg. For nearly fifty years he rendered distinguished service as an author of text-books, as an editor of pharmaceutical journals, as a teacher of pharmaceutical students, as a member of the Revision Committee of the United States Pharmacopœia, and as an earnest worker in, and one-time President of, the American Pharmaceutical Association. It is our sincere conviction that Professor Oldberg was one of the ablest thinkers, and one of the greatest leaders of permanent reform

and advancement, which the history of American Pharmacy has so far developed. He had the prophet's insight. He was able to pierce the future. He saw what pharmacy needed in its further unfolding and development. For considerably more than a quarter of a century his was a voice crying out from the wilderness, urging numerous educational, registrational and legislative reforms with singular logic, power and patience. His ideas gained currency by the sheer weight of their own significance. His opinions came to be accepted by many who were ignorant of their origin. The reforms he advocated are every year coming into a fuller realization, and the future development of pharmacy will in no small measure be conditioned upon the quiet, unobtrusive, but all-pervasive and constructive work of Oscar Oldberg.

We deeply deplore his death. We feel it to be a great blow to the American Pharmaceutical Association. We feel it to be an even greater blow to American Pharmacy as a whole. To the members of the bereaved family our hearts go out in deepest sympathy, and we vote and direct that a copy of this memorial shall be sent to each of them, and as well to the pharmaceutical press of the country.

WM. B. DAY, Chairman,
HARRY B. MASON,
CHARLES W. PATTERSON,
Committee on Memorial to Oscar Oldberg."

Motion No. 22 (*Appropriation of* $25 *for National Drug Trade Conference*). Moved by J. H. Beal, seconded by J. A. Koch, that the sum of $25 be appropriated for the use of the National Drug Trade Conference.

The above motion is approved by the Chairman of the Finance Committee.

Motion No. 23 (*Election of Members*). You are requested to vote on the following applications for membership:

No. 118. T. M. Macbeth, Apartment 9, Marchel Court, Memphis, Tenn., rec. by H. M. Faser and A. W. Clark.

No. 119. William E. Frye, 23 Vine St., Brooklyn, N. Y., rec. by H. M. Whelpley and G. N. Dissoway.

No. 120. Arthur Floyd Schlichting, 520 Hill St., Ann Arbor, Mich., rec. by W. S. Hubbard and A. B. Stevens.

No. 121. J. Otto Kohl, McMicken and Mohawk Place, Cincinnati, Ohio, rec. by C. F. P. Fennel and Theo. D. Wetterstroem.

No. 122. John Kernikamp Mehrtens, 525 11th Ave., San Francisco, Cal., rec. by Fred I. Lackenbach and J. H. Beal.

No. 123. Adolph G. Rosengarten, 9th and Parrish Sts., Philadelphia, Pa., rec. by J. H. Beal and J. W. England.

No. 124. Frederick Rosengarten, 9th and Parrish Sts., Philadelphia, Pa., rec. by J. H. Beal and J. W. England.

No. 125. J. Fred Windolph, Hayes St., Norwich, N. Y., rec. by J. H. Beal and J. W. England.

No. 126. Lloyd P. Griesemer, 135 N. 16th St., Philadelphia, Pa., rec. by Charles H. LaWall and E. Fullerton Cook.

No. 127. Leroy Forman, 1320 N. 59th St., Philadelphia, Pa., rec. by Charles H. LaWall and E. Fullerton Cook.

No. 128. Charles H. Irwin, U. S. Public Health Service, Fort Stanton, New Mexico, rec. by F. A. Southard and George F. Payne.

No. 129. Wendell J. Gift, Converse, Indiana, rec. by A. H. Dewey and C. B. Jordan.

No. 130. L. E. Highley, Hot Springs, S. D., rec. by H. M. Whelpley and Theo. F. Meyer.

No. 131. John C. Otis, Clarion and Montgomery Sts., Cincinnati, Ohio, rec. by C. F. P. Fennel and J. H. Beal.

No. 132. Joseph A. Velsor, 9 Gold St., New York, N. Y., rec. by J. H. Beal and J. W. England.

No. 133. J. G. Rosengarten, Jr., 9th and Parrish Sts., Philadelphia, Pa., rec. by J. H. Beal and J. W. England.

No. 134. Harry E. Pye, Sergeant, Hospital Corps, U. S. Army, Fort Mills, P. I., rec. by Edgar T. Hitch and Nels Rasmussen.

No. 135. William Q. Fancher, Sergeant, Hospital Corps, U. S. Army, Fort Frank, Corregidor, P. I., rec. by Edgar T. Hitch and Nels Rasmussen.

No. 136. Harold Both, Sergeant Hospital Corps, U. S. Army, Fort Mills, P. I., rec. by Edgar T. Hitch and Nels Rasmussen.

No. 137. Edward Williams, 4401 Harrison St., Chicago, Ill., rec. by Mrs. M. M. Gray and E. N. Gathercoal.

No. 138. Richard V. Mattison, M. D., Ambler, Pa., rec. by J. H. Beal and J. W. England.

No. 139. Mr. H. W. Prentis, care Armstrong Cork Co., Pittsburgh, Pa., rec. by J. H. Beal and J. W. England.

No. 140. John Weik, Edward and Madison Rd., Cincinnati, Ohio, rec. by Charles Ehlers and Edw. Voss, Jr.

No. 141. William Lakamp, 2623 Montgomery Ave., Cincinnati, Ohio, rec. by Fred S. Kottle and Edw. Voss, Jr.

No. 142. Harold W. Jones, care The Wm. S. Merrell Chem. Co., 5th and Pike Sts., Cincinnati, Ohio, rec. by Charles G. Merrell and Theo. D. Wetterstroem.

No. 143. Edwin Heinemann, 1572 Elm St., Cincinnati, Ohio, rec. by F. S. Kotte and Theo. D. Wetterstroem.

No. 144. Leonard A. Lange, 486 Market St., Milwaukee, Wis., rec. by J.H. Beal and J. W. England.

No. 145. C. V. Boetcher, Corner Spring and Front Sts., Columbus, Ohio, rec. by J. H. Beal and J. W. England.

No. 146. Peter E. Hermann, 1144 Second

Ave., Cincinnati, Ohio, rec. by George B. Kauffman and J. H. Beal.

No. 147. Frank A. Ruf, 1624 Pine St., St. Louis, Mo., rec. by J. H. Beal and J. W. England.

No. 148. Albert Whitman Claflin, 70 South Main St., Providence, R. I., rec. by J. H. Beal and J. W. England.

No. 149. William Horlick, care Horlick's Malted Milk Co., Racine, Wis., rec. by James W. Morrison and J. H. Beal.

No. 150. William Horlick, Jr., care Horlick's Malted Milk Co., Racine, Wis., rec. by James W. Morrison and J. H. Beal.

No. 151. Bryan Brewster Gilmer, 3402 Garrott St., Houston, Texas, rec. by J. H. Beal and J. W. England.

No. 152. Bert W. Strickland, 1500 Broadway, Denver, Colo., rec. by F. W. Nitardy and C. L. Bush.

No. 153. William Tracy Hover, 510 Franklin St., Denver, Colo., rec. by F. W. Nitardy and C. L. Bush.

No. 154. James A. Ferguson, 134 Thompson St., Philadelphia, Pa., rec. by R. H. Lachey and J. W. England.

J. W. ENGLAND,
Secretary of Council.

415 N. 33d St.

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Obituaries and Memorials

Persons having information of the death of members of the A. Ph. A. are requested to send the same promptly to J. W. England, 415 N. 33d St., Philadelphia, Pa. Information as to the age, activities in pharmacy, family, etc., of the deceased should be as complete as possible. When convenient a cabinet photograph should accompany data.

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CARL FREDERICK JACOB BRUCKER.

Carl Frederick Jacob Brucker, senior resident member of the firm of Fritzsche Bros., New York, died, after a prolonged illness, on March 23, 1913, in his home at Passaic, N. J. Funeral services were held there Wednesday morning; the interment was private and took place the same day.

He was born in Frankfort-on-Main, November 24, 1858, came to the United States in 1884, and returned to Germany the following year. In 1892 he returned to the United States, when he became a member of the firm and so continued until his demise.

Mr. Brucker was prominently identified with the essential oil industry for nearly thirty-four years, as associate with Schimmel & Co. (Fritzsche Bros.), Miltitz, near Leipzig, Germany and Fritzsche Brothers, New York. He became a member of the American Pharmaceutical Association in 1902. He was a member of the Chamber of Commerce, the New York Board of Trade and Transportation and various scientific and commercial and social clubs. He was a man of commanding appearance, retiring disposition, and liberal to charities. He had a charming personality and was held in the highest regard by all who knew him. J. W. E.

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OSCAR OLDBERG.

American pharmacy mourns the loss of one of its ablest leaders. Oscar Oldberg, eminent teacher, profound thinker and brilliant writer, has passed away, leaving a gap in his profession that it will scarcely be possible to fill. Dr. Oldberg's reputation needs no testimony from his contemporaries. His fame is secure. Generations yet to come will accord him a most prominent place among the great pharmacists and teachers of his time. Eager to advance the status of pharmacy as a profession and far-sighted to an unusual degree, he early gave warning of difficulties with which pharmacists are now contending and he constantly urged the necessity of cultivating the professional spirit as opposed to the commercialism which has now become so apparent.

Professor Oldberg fought courageously for the principles which he believed to be right and his unquestioned ability and indomitable purpose placed him in the forefront of the battle and subjected him to the stress and strain under which his physical powers, never robust, finally gave way.

In the councils of the American Pharmaceutical Association, Professor Oldberg will long be missed. The interests of this Association were dear to him and his best services were always at its command. Many of the members of the A. Ph. A. will experience in his passing a sense of personal loss.

W. B. DAY, President.

Changes of Address

All changes of address of members should be sent to the General Secretary promptly.

The Association will not be responsible for non-delivery of the Annual Volume or Year Book, or of the JOURNAL unless notice of change of address is received before shipment or mailing.

Both the old and the new address should be given, thus:

HENRY MILTON,
From 2342 Albion Place, St. Louis, Mo.
To 278 Dartmouth St., Boston, Mass.

Titles or degrees to be used in publications or in the official records should be given, and names should be *plainly* written, or typewritten.

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EBLE, CHAS. F.,
From Manila, P. I.
To Camp Keithley, Mindanao, P. I.

FONTEYNE, GUSTAVE J.,
From Manila, P. I.
To "Siasi," P. I.

HARRIS, SAMUEL J.,
From Guimaras, P. I.
To F. H. & A. C. No. 2, Presidio, San Francisco, Calif.

HUGHES, J. R.,
From Houghton, S. Dak.
To care Eagle Boek Drug Store, Idaho Falls, Idaho.

JONGEJAN, CORNELIUS J.,
From 331 Granville Ave.,
To 753 Grandville Ave., Grand Rapids, Michigan.

KANTOR, MORRIS,
From 522 W. 152d St.
To care Kantor & Kantor, 184th St., Cor. Audubon Ave., New York, N. Y.

LOWE, DAVID,
From Winthrop, Mass.
To residence unknown.

NOREEN, MATT,
From San Francisco, Calif.,
To residence unknown.

RASMUSSEN, NELSON,
From Grande Island, P. I.
To Ft. Mills, Corregidor, P. I.

SCHULTZ, J. J.,
From 528 Main St., Lafayette, Ind.
To 1109 Tippecanoe St., Lafayette, Ind.

WATSON, ELISHA,
From Rule, Texas.
To Newcastle, Texas (Young Co.).
(Was given last month as Newcastle, Pa.)

WATSON, G. N .
From 808 Alabama St.
To 1001 Maine St., Lawrence, Kansas.

WILCOX, RUSSELL C.,
From Gary, Ind.
To residence unknown.

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B. P. WEIGHTS AND MEASURES.

The Pritish Pharmacopœia authorities have a reputation for sanity in the matter of weights and measures. The reputation is now in peril. We reported a fortnight ago that the Imperial system is threatened so far as the text of the work is concerned, and we have since learned that the metric system is not beyond the designs of the tinkerers, inasmuch as representations have been made to the Pharmacopœia Committee (not the Committee of Reference in Pharmacy) that the description "Cubic centimeter" should be replaced by the term "mil." It is difficult to conceive that the suggestion should be taken seriously, or that any comment is necessary, nevertheless it appears to be desirable to point out the objections to the employment of the term "mil" in pharmacy and medicine—it is not used by professional chemists. These objections fall under two heads:

1. The danger.

2. The confusion which will result from the employment of a word which already has several meanings.

As to the danger, abbreviations for "mil" would probably be employed by medical men in writing prescriptions, and the likeliest contraction would be "m" because it is the shortest. This contraction is in established use as the sign for minim, an Imperial measure of volume adopted in all the editions of the British Pharmacopœia. If, therefore, the contraction were used in prescriptions as a representation of "mil," a patient would obtain one-fifteenth of the medicament required. This would be serious in most cases. American pharmacists of the first rank object to the term, e. g.:

"The Committee of Revision of the National Formulary have decided that the term "mil" is an undesirable substitute for the abbreviation cc. in the new edition of that work."—*C. & D.*, August 26, 1911, p. 353.

"Mil" can very easily be mistaken for the well-known milligramme. — Raubenheimer, *National Druggist*, August, 1911.

As to the second objection—viz., that it would lead to confusion—we give a few instances of the use of the word and of words with the same pronunciation:

A. As unit of length:

"1 mil=10—3 in."—Kay and Laby's "Physical and Chemical Constants," 1911.

"A circular mil is a unit of area for measuring cross-sections of wires, tubes and rods, being the area of a circle whose diameter is 1 mil."—Murray's "Historical Oxford Dictionary."

"The Imperial Standard Wire Gauge, which has been sanctioned by the Board of Trade, is one that was formulated by J. Latimer Clark. Incidentally, one of its recommendations is that it differs from pre-existing gauges scarcely more than they differ among themselves, and it is based on a rational system (basis being 1 mil). No. 7/0, the largest size, is 0.50 in. (500 mils) in diameter, and the smallest, No. 50, is 0.001 in. (1 mil) in diameter."—"Encyclopedia Britannica," vol. xxviii, p. 739.

B. As unit of currency:

"Mil," a money of account in the United States, being one thousandth of a dollar (one-tenth of a cent)."—"Standard Dictionary." (Possibly employed in Canada also.)

"The two principal schemes of decimalization are the pound and mil schemes and the penny and ten-franc scheme." — Jevons' "Money," xiv, 176.

"It is proposed that the smallest coin, one thousand to the pound, shall be called the mil."—Humphrey's "Coinage of the British Empire," p. 149.

Hong Kong coins include the bronze "mil."

C. As measure of length:

"Mil" is a Danish mile (4,680 mile).

"Mil" in Turkey is 1,000 archins.

D. Other uses:

"Mil" is "a thousandth part of anything."—"Standard Dictionary."

"Per mil"=per thousand.—Murray's "Dictionary."

"Mill" or "mille" in card games is a counter representing ten "fishes" or "points."

"Mil," synonym for millet seed, which may possibly have been employed as small weights. It is also given in old works as synonym for "milium solis."

"Mil," a town in Holland.

As far as British pharmacy is concerned the term "mil" has signally failed to catch on, and it is to be hoped that the Pharmacopœia Committee will not be deluded into believing the contrary on account of the use of the term in a book to which the Pharmaceutical Society of Great Britain has given its authority.—*Chemist and Druggist.*

CLEVERNESS IN ADVERTISING.

An advertisement may be clever. If you are able to word it in a pointed, pithy way, this will certainly not detract from its selling power. On the contrary, it will add to the value of the advertisement. Again we must not confound mere "smartness" with cleverness. Nobody likes a "flip" salesman, therefore the probabilities are that nobody likes a flip advertisement. To be really clever, you must be kind as well. Cleverness and humor may go hand in hand. But remember that while an advertisement may be both humorous and clever, it need not necessarily be either to be a success.—*W. S. Adkins.*